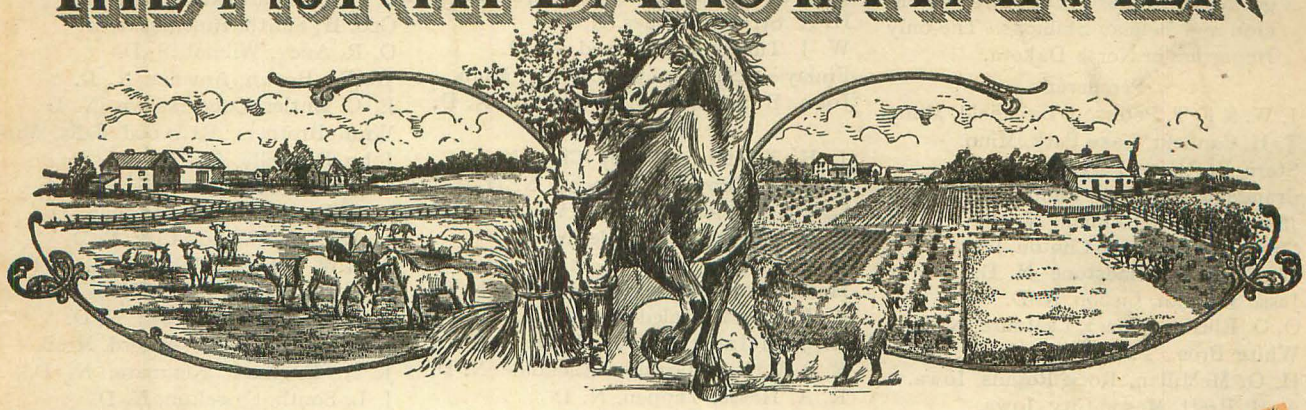
THE NORTH DAKOTA FARMER

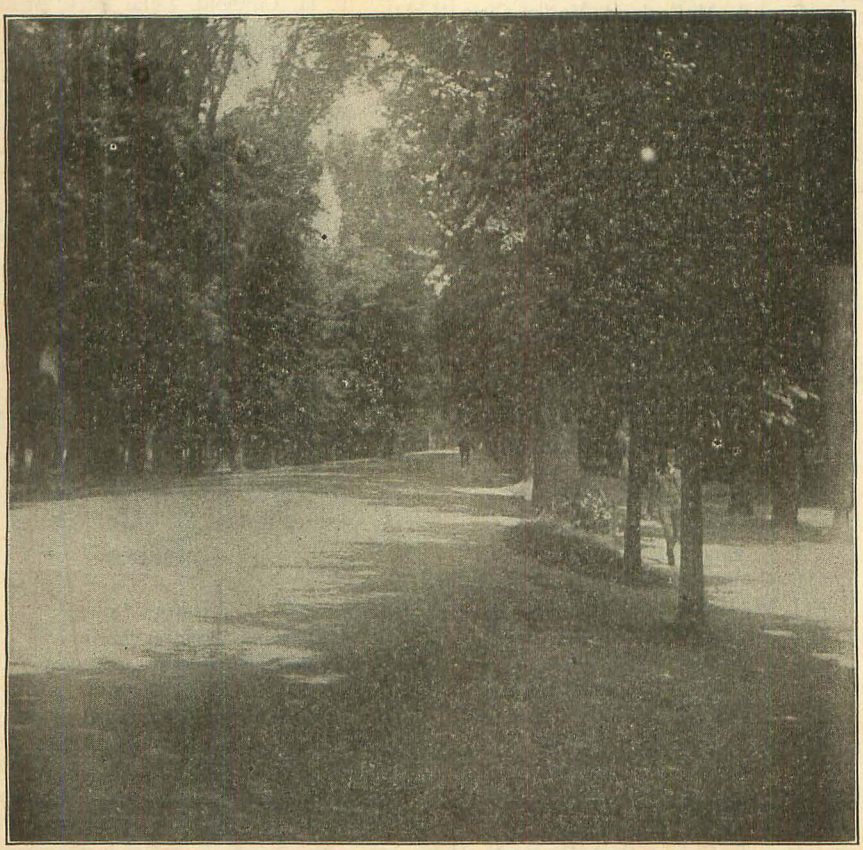


"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 9, No. 12
LISBON, N. D.

JUNE 15, 1908

50 Cents a Year
FARGO, N. D.



AN IDEAL FOREST IN HOLLAND

What is Possible in Holland May be Attained in North Dakota, where Forests Once Abounded

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THE NORTH DAKOTA FARMER

Vol. 9, No. 12 LISBON and FARGO, N. D., JUNE 15, 1908 50 Cents a Year

MY EUROPEAN TRIP

By PRES. J. H. WORST, N. D. A. C.

THE PEAT COLONIES

HOW HOLLAND CONSERVES AND DEVELOPS HER NATURAL RESOURCES

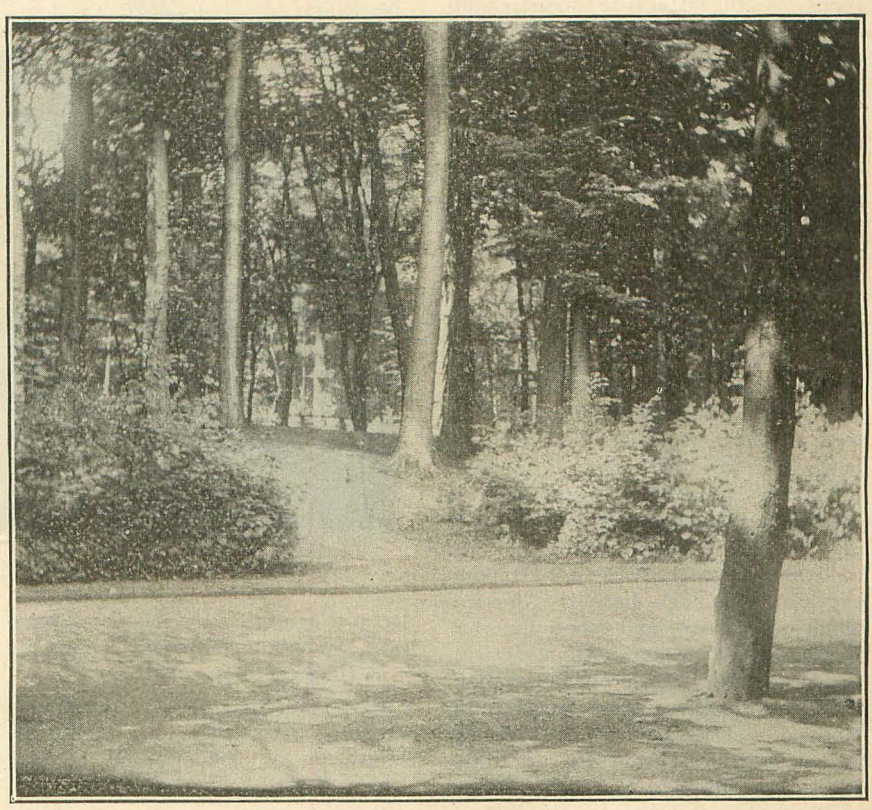
In the southern part of Groningen, a province of Northern Holland, is a considerable region of country covered with a layer of peat averaging about seven feet in thickness. This vast peat bed is covered with a thin layer of sand which supports a short growth of heather; otherwise the country is barren and unproductive. This country is known as the heather or peat lands and is owned largely by the above named provincial government. To make use of this vein of peat and to bring the peat lands under cultivation the provincial authorities employ laborers to dig parallel ditches at frequent intervals and to divide the land into plots of about forty acres each. The peat taken out in the process of excavating the ditches practically pays the expense of digging the ditches.

These plots of land are then sold to private parties who clear the land of peat for what it will bring in the fuel market. The government realizes about $100 per acre for the land which, however, is sold no faster than the peat, which is thus produced, is needed for general consumption. These ditches dug at government expense are large enough to accommodate canal boats which transport the peat to market and, later on, carry the products of the cultivated fields to the factories and commerical centres. The peat is used for domestic fuel and for producing steam in the starch and paper factories, mills distilleries, breweries, etc. After the peat is removed the land is generally sold to actual farmers and brings an average of $300 per acre.

Underlying the peat is a stratum of dark, ash-colored sand which, after being fertilized and cultivated a few years becomes quite productive. To begin with the land is given, as a general rule, about the following fertilizers per acre, viz: 450 pounds of potash 150 pounds of super-phosphate and 120 pounds of nitrate of soda. The land that is thus fertilized will produce from 450 to 500 bushels of potatoes per acre—the kind of potatoes used for the manufacture of starch and alcohol.

Within that portion of the peat district already under cultivation, fifty starch factories are now in operation and, as before stated, the area being made ready for cultivation is constantly enlarging as the peat is being removed; but unlike the American idea, the Dutch do not seem anxious to convert their peat into ready cash by the most wasteful methods, to get the land under cultivation, ostensably to build up the country—but in reality to enrich a few speculators. The peat is removed just as fast as local consumption requires, and no faster. The Dutch are willing to leave something in the way of natural resources for their children.

We visited one of these co-operative starch factories where 200 farmers combined to erect, equip and operate the plant. The capital stock consisted of 3000 shares valued at $40 per share. This factory employs 200 men and has a capacity of 160,000 bushels of potatoes per week during the operating season. Each farmer having stock in the factory is under obligations to furnish annually a certain number of bushels of potatoes for each share of stock; in this case about 500 bushels per share. The starch finds a ready market, however, and potatoes are often engaged from other than shareholders, a year or more in advance.



A Forest of Holland Well Protected

The potatoes are carried direct from every field to the factory in boats, as scarcely any land in the country is more than half a mile from navigable

canals. With all this water in the vicinity, strange as it may seem, none of it ever gets into the stock of a Dutch co-operative concern. In fact the co-operative idea has become so strong among Dutch farmers that the trust concerns and private corporations have been practically driven out of business. The great corporation card-board and paper mills, the butter and cheese as well as the starch and alcohol manufactories have generally had to succumb; but by selling large blocks of their stock to farmers they have become, in effect, co-operative factories, or work on the same basis as other co-operative concerns. The Dutch farmers have thus throttled the trusts and to a great extent eliminated the middlemen. Their agricultural societies perform practically all the functions of middlemen without the usual profit taking or speculative character of middlemen. In this way the farmer gets the full value of all agricultural products, less the actual cost of service required to market the same or to manufacture them into consumable goods. In the latter case the shareholders participate in the enhanced value of their farm products from being manufactured.

The agricultural societies also provide farmers with seeds, commercial fertilizers, etc., of guaranteed strength and purity, at what they cost in bulk, with a small commission added to cover the expense of handling and inspection.

Graft is unknown and the farmer gets all that is coming to him, whereas, here the farmer gets for his products what the middlemen are willing to give him and pays them, in return, whatever they ask for what he must purchase. In Holland the farmers attend to their own business so far as relates to farm products, and as far as it is profitable, to their manufacture and distribution. It may be incidentally mentioned that millionaires are very scarce in Holland tho plenty enough here in America. What our country and especially what North Dakota needs is strong agricultural organizations, such as prevail in most European countries, especially in Holland and Germany. The purpose of these organizations is to secure to the farmer the full value of his agricultural products, less the actual cost of distribution, and to secure him against fraud and excessive charges for what he must purchase in the way of seed grain, commercial fertilizers and farming implements. These societies also disseminate information that has a bearing upon practical agriculture originating in the agricultural colleges and on the experimental farms.

The European farmer may not have an excess of culture so defined by our leading educational institutions, but he is quite conversant with such subjects as the soil and its proper cultivation, the rotation of crops best adapted to his locality, and what fertilizers he can produce on the farm or that he must purchase in order to compel every acre to produce its best every year, and that too, without deteriorating in productive power. As a result, fields that have been under cultivation for centuries are more productive than ever before, and in spite of high rents and limited acreage the farmers are making a comfortable living.

After peat has been removed and the land given to potato culture for several years wheat, rye and oats become profitable crops. Heavy fertilizing is constantly required, however. An instance was cited where a man put $4000 worth of commercial fertilizer on 187 acres of land and made a good profit from the crop produced.

Peat lands that have been reclaimed for 50 years or longer are highly productive for all kinds of grain and vegetables, including hay and pasture.

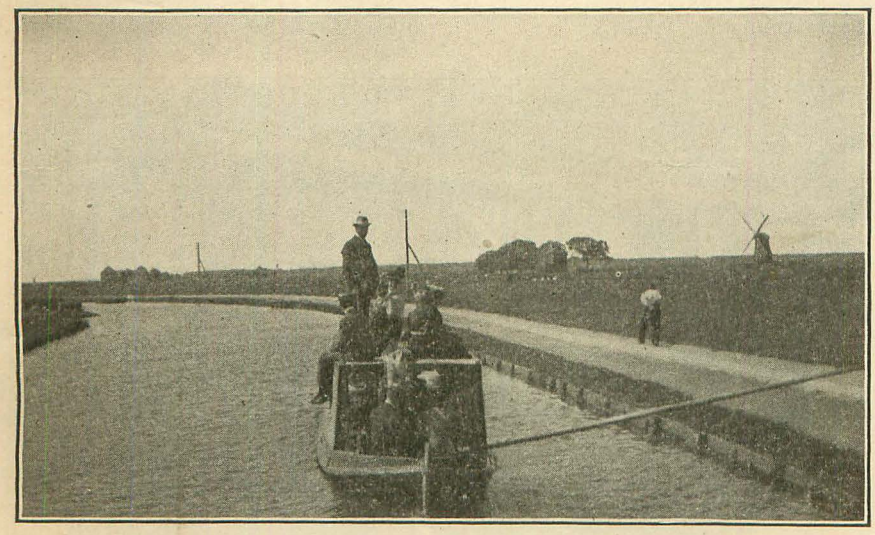
From the thousands of acres of heather or peat lands yet remaining, barren and unproductive tho they are at present, Holland will yet reap a rich harvest. The government will not sacrifice the lands at the behest of speculators or exploiters. For many years to come this peat will continue to be a fair substitute for coal or wood for fuel and steam production, and as this fuel producing area gradually decreases the farming area will increase accordingly. But the Dutch are a patient people and seem willing to husband their fuel resources as long as possible, notwithstanding the tremendous population of the country in proportion to the area of land that can be cultivated.

Our own countrymen should learn a lesson from Holland and other European countries. We are wasteful and extravagant from the very excess of our natural resources. We have not yet had to learn the lesson of economy. Our forests and mines have melted away before the onslaughts of exploiters to an alarming degree and millions of acres of once productive lands are already abandoned as worthless, simply because virgin lands can still be had in abundance. The most fertile lands of the country are being robbed systematically of their fertility in the grand rush for immediate wealth. The day of reckoning will come, however, and the others must suffer on account of our prodigality, yet those who despoil the land cannot wholly escape some sort of retribution.

A Typical Dutch Farm Home

Americans make a fearful mistake when they disregard as obsolete, many of the economic and industrial methods adopted by Europeans. The fact is Europeans can only take where they have given, and in proportion as they give; while we can still play the part of soil and mine and forest robbers with tremendous profit to ourselves—a profit that exactly squares with the hardships we shall impose upon posterity. What we call prosperity is largely the result of pillaging the patrimony that God intended for future generations. It would not be so bad if we were to simply take

it, but our method of taking is to waste the bulk of our natural resources in order to more quickly realize personal fortunes out of nature's bounty, like slaughtering buffalo for their hides or burning the valuable timber from a mountain side to facilitate the growth of grass for a sheep pasture. Europeans have nothing left to squander. They must first fertilize the land before they can produce a crop, and the crop thus produced will be exactly in proportion to the kind and quality and quantity of fertilizer used. In Holland and Belgium and other grain growing countries agriculture is reduced to an exact science, or as nearly so as is practical. They purchase fertilizers and make a large profit on their cost, while in the northwest our farmers do not get commercial value for the nitrogen, phosphoric acid and potash they sell in the form of wheat. What a travesty to become puffed up on account of our money making qualities when, as a matter of fact, we are mining out the most precious elements in our soil and selling them for less than their market price. It would be interesting to anticipate the account of our intelligence and patriotism which the future historian may feel called upon to write. The prodigality manifested by northwestern farmers is astounding. Our whole history, so far as it relates to waste of timber, coal and soil fertility is heartless; it is criminal.



After the Peat Has Been Mined

ON THE USE OF CHEMICAL SPRAYS IN DESTROYING MUSTARD, KINGHEAD AND OTHER WEEDS IN CEREAL GRAIN FIELDS

By H. L. Bolley, Botanist

The earlier experiments conducted by the botanical department of North Dakota Experiment Station looking toward the eradication of weeds in cereal grain fields by means of chemical sprays attracted world wide interest, tho little has as yet been undertaken by the farmers of North Dakota. Great interest, however, was awakened by the field demonstrations and experiments undertaken by this department during the past sesaon. Careful field trials have been made upon the various grain crops, meadow grasses and forage plants and against the most destructive of weeds in the cereal field with the result that many persons have been convinced that in this method of weed eradication the farmer will have very efficient help. In general, it may be taken for granted that the increase in crop, straw and grain, because of treatment, will be in close approximation to the weight of weeds produced on unsprayed areas. In the weedier regions of the Red River Valley and in similar areas, this increase yield from field spraying far exceeds the cost of the work. It has also the merit of preventing the introduction of more weed seeds into the grain and soil to cause trouble in future crops.

Types of Machines to be Used

In buying a field sprayer the purchaser should have in mind the amount of work he has in view, and whether he desires to use it for other purposes than weed spraying, the following suggestions will perhaps aid. Procure as simple and as sturdy or rigid construction as possible. The solution corrodes all iron and steel parts, therefore all parts which come in contact with the solution should be of wood, rubber or brass construction. It is absolutely essential that the solution should be thrown in a fine, forceful spray, at the rate of one to one and one-half barrels of liquid per acre, therefore the pump capacity of the machine should be large. There should be a gage to show the pump pressure. The pressure should not fall below 100 lbs. to the square inch. All machines should be fitted with a pole for two or more horses, and should hold at least 52 gallons of solution. For the larger farms, carts of two barrel capacity will be desirable. Wide tires are a necessity. The spray beam should be fitted with nozzles sufficient to throw at least 52 gallons of solution per acre as the team walks along. An adjustable type of nozzle is desirable.

In the case of centrifugal machines they should be adjusted to throw a like amount of solution and the speed should be such as to produce a fine misty spray. Hand machines can be obtained when it is wished to spray small areas and in places difficult to reach with a traction machine.

How to Spray

Most all the carts for field work have nozzles so adjusted as to spray from a rod to twenty feet in width. When spraying at a rate of one barrel of solution per acre a cart which holds 52 gallons and has a spray beam slightly less than one rod wide can thus be driven 160 rods before being filled or approximately 80 rods and return. In a large field it is thus desirable to have two or more points at which the solution is mixed, at which points are located three or four mixing barrels. The water may be transported by means of the ordinary threshing tank. In the case of most substances it is desirable to allow the liquid to stand from five to ten minutes before it is placed in the spray cart thus allowing the person who is doing the mixing sufficient time to thoroly stir and cause the salt to go thoroly into solution. A hoe is the most satisfactory tool with which to stir the solution. When it is desirable to cover as large an acreage per day as possible it is desirable to have one or more helpers at each filling point, making it possible to speedily fill the spray cart and keep the teams moving. When placing these filling points it is desirable to note the direction of the wind so that the carts can be driven with the side on the wind thus causing a drift of the solution, so as to cover up any errors in driving and also to have the spray blow in such a direction that it will not interfere with the horses or driver. One cannot state what any one of the machines will do without a trial, therefore it is advised that a spray tank be filled with a known number of gallons and that it be driven until empty. It can then be computed how many gallons are being thrown per acre. If the machine is throwing one and one-half barrels of solution per acre then the strength of the solution will need to be lessened in proportion. In general, a machine should be adjusted on coming from the factory so as to throw approximately from one to one and one-fourth barrels per acre or else

be so made that the operator can make the adjustment. The driver should either drive by stake or sufficiently overlap to insure the covering of all areas. In case of the centrifugal machines, a proper overlapping should be given to result in an equal distribution of the solution.

When to Spray

As near as possible one should select a time when the grain crop is just ready to occupy the land if the weeds were not there and a time when the grain plants and weeds are making rapid growth is most desirable. Slow growing weeds are hard to kill and slow growing grain is more apt to be injured than that which is making a rapid growth. The more succulent the weeds the more easily they are killed.

Generally speaking, when mustard or king head plants are from four to ten inches high just at a time when they are beginning to over-top the grain is the most desirable time for spraying; perhaps it may be stated, as when the weeds are in the third to fifth leaf. A still day is preferable for this spraying work but if care is taken in driving, reasonably good results will be obtained upon windy days providing there is a bright sun. Select a time when it is not likely to rain for two or three days as the best effects of spraying will be prevented by rains closely following the time of spraying.

What to Use

The substances which the writer has used with success on these weeds are iron sulphate, copper sulphate, common salt, and sodium arsenite. Against mustard it is probable that they are named about in the order fo their efficiency and desirability. As used against king head the reverse order will give about their order of efficiency. We recommend for use in cereal grain fields against mustard and king head the following strengths:

Iron sulphate 75 to 100 lbs. to each 52 gal. of water according to the succulent nature of the growth. If the weeds are young and very succulent 75 lbs. will give splendid results. If it is a rather dry time and the weeds are slow growing 100 lbs. should be used. Copper sulphate may be used at the rate of 12 to 15 lbs. for each 52 gallons of water, and salt 70 to 100 lbs. for each 52 gallons. Approximately 1-3 bbl. salt for each 52 gal. of water gave very satisfactory weed killing power in the experiments conducted this season. This solution is apparently somewhat more injurious to grain but acts much more quickly upon king head than iron sulphate. As yet, I am unable to recommend it as highly for work on mustard as in the case of iron sulphate or copper sulphate. Sodium arsenite in a number of preliminary experiments has usually given much more efficiency as a weed destroyer than either of the preceding. We recommend its use against king head at rate of from one to one and one-half pounds to each 52 gallons of water. It is an extremely poisonous solution and great care should be used in handling and disposing of same. The merits of this substance are that it is quickly active, destroying the weeds even tho the rain follows within a few hours. It, too, is somewhat more destructive in its action than iron sulphate and it may yet be possible that under certain conditions that it would be slightly injurious to the yield of grain. It has not yet been tried upon so extensive a plan tho the small amount of material needed and cost is a matter that makes it worthy of general trial. As the arsenite is extremely poisonous, I would not recommend its use in hay fields nearing harvest time or upon grain fields, the straw of which is to be fed to stock unless the fields are sprayed when the grain is very young.

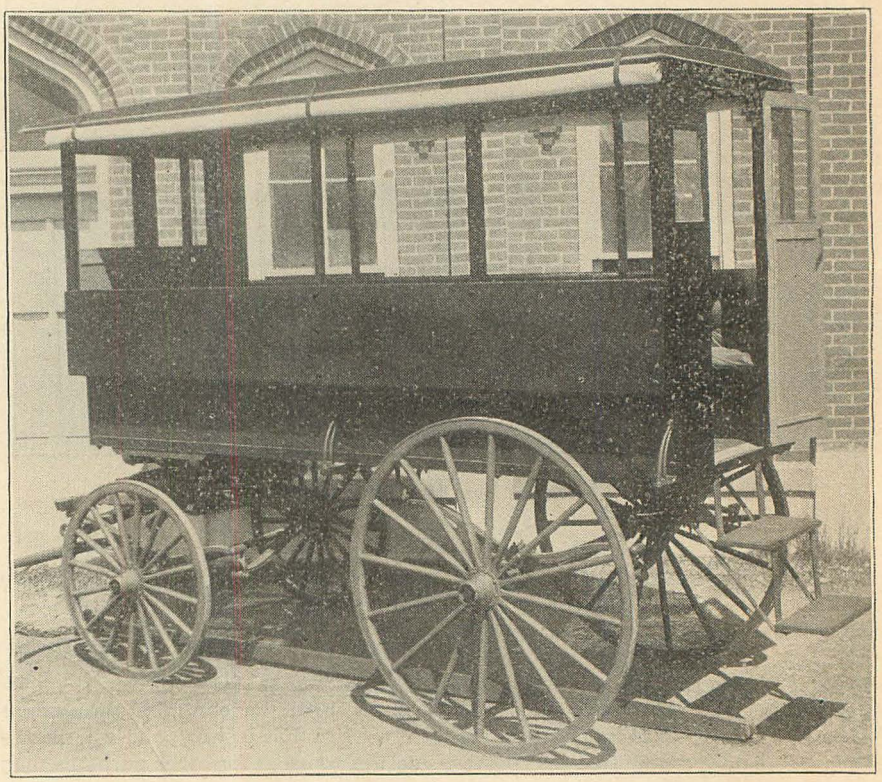
In spraying for destruction of weeds in grain fields it must not be forgotten that the road sides are important factors in keeping the land full of wind blown seeds, therefore give the roadsides an extra trip or two, that they may eventually become grown up to grass instead of annual weeds. These substances are recommended here for mutsard and king-head and will dispose of other annual weeds which they thoroly wet including Red-River weed, common rag weed, and pepper grass and will much weaken and retard the development of the Frech weed, wild buckwheat, black bind weed, rose bushes, wild docks, Canada thistle and many other of the destructive weeds which invade cereal fields.—Press Bulletin, N. D. Experiment Station.

DETERIORATION OF WHEAT

How Quality is Affected by Climate Soil, Culture, Etc.

Read before the Indina Millers' Association by Prof. A. T. Wiancko, of Purdue University, May 15, 1907.

In considering the question of deterioration of wheat, there are a number of points to be taken into account, affecting the producer, the miller, the baker and the consumer. Deterioration may take place along a number of different lines. Each has its particular causes, and each has a definite relation to the ultimate value of the wheat. The farmer is mostly concerned with the yielding power, hardiness against unfavorable weather conditions, and resistance to rust and other diseases. The miller looks at the plumpness, hardness, size and shape of a berry; weight, color, brightness; and, in general, those characteristics which indicate to him the amount and equality of the flour the



Wagon Used for Consolidated Schools. A Partial Solution of the Rural School Problem.

wheat will produced. The baker is concerned with the color of the flour, its texture, and any other qualities which indicate to him the amount and quality of the bread it will make.

Since the members of this association are chiefly or wholly interested in the production of flour for bread making, I shall confine my attention to the qualities required in wheat for that purpose. It will not be necessary here to take up time in discussing the qualities that go to make up a good grade of wheat, since every well informed miller is well acquainted with the composition and other characteristics of wheat upon which good quality depends.

The quality of wheat is dependent upon, and is variously affected by climate, soil, variety of wheat, quality of seed, cultural methods, time of maturity, time of harvesting, and methods of curing and storing; and any one of those factors may cause deterioration, or a falling off in quality.

The climate, including temperature and moisture condition, has more influence than all other factors upon the quality of the wheat produced in a given section of country. Studies of the climatic conditions, in wheat producing areas all over the world, have shown that the wheat of best quality are produced in localities having extreme climates. The temperature and moisture conditions, especially from the time of blossoming to time of ripening, or during the last month before harvest, very largely determine the quality of the wheat produced. Cool, moist weather produces rather soft, light colored wheats, as is the case in New York and the New England states. Hot, dry weather, produces hard, glutenous wheats, as is the case in Kansas, Nebraska, Minnesota, the Dakotas and Manitoba. In parts of Oregon, Washington and Iadho, the cool weather, even tho dry, tends to produce starchy wheats. Several investigators have shown that the same variety when moved from one climate to another will change in character, and become more and more like the acclimated wheats of the particular locality. For example, a wheat moved from New York to Kansas, will gradually become darker in color and more glutenous, and a wheat taken from Kansas to New York, will gradually become lighter in color and more starchy. The influence of climate is further shown in the wide differences in the gluten of wheats in different seasons in the same locality. At the Ohio Experiment Station, the average per cent of protein in 42 varieties of wheat, was 9.57 in 1903, and 16.07 in 1901, a difference of 6.5 per cent in favor of the dry, hot season. This, however, is an extreme; the season of 1901 was so excessively hot and dry that the wheat was very much checked in development, and the grain was very much shriveled and light in weight and in yield per acre. The ripening period was unduly shortened.

Plenty of moisture makes a long ripening period, producing more straw, and elaborating more starch, which results in a low proportion of gluten, and yields a more or less soft, starchy wheat. A uniformly warm ripening period, with only enough moisture to prevent untimely ripening or shriveling, gives the best climate condition for the production of a good strong wheat.

The influence of the soil upon the quality of wheat is not so marked as is that of climate, but it is of sufficient importance to merit careful attention. A good soil for wheat should be rather fine and firm in texture, and should contain a good supply of available plant food, and especially of active humus. Carlton says, concerning the Eastern states, that the soil, if not heavily fertilized, does not contain the necessary amount of alkali, phosphate, and humified organic matter required for the production of hard, glutenous wheats. In the "irrigated wheat" district (New Mexico, Arizona, Colorado, Utah, Idaho, Wyoming, Montana) the lack of humus in the soil is the chief cause of the low gluten content. The wheats are extremely starchy, and hard sorts, when introduced, deteriorate rapidly. In the "white wheat" district (Pacific Coast) the wheat is also very starchy, and low in gluten, and here, too, the most important cause is generally considered to be lack of humus in the soil. Prairie soils, rich in organic matter, with hot summer climates, and not much summer rain, produce the hardest and best wheats. In a given locality, as for example, the State of Indiana, a gradual deterioration of wheat may be caused by diminishing soil fertility. Wherever the soil has been run down, or worn out, as the sayng is, by heavy cropping and careless management, the quality of the wheat produced is not nearly as good as it was when the soil was first brought under cultivation. This is the case in many parts of Southern Indiana. The supply of available plant food has become seriously depleted, and the virgin humus has been used up to such an extent that actual poverty exists in the soil. The remedy here lies obviously in restoring the original amount of humus to the soil, and in bringing up the available plant food supply to a reasonable level. On a well balanced, fertile soil, with plenty of humus, the application of manures or special fertilizers has no very material affect upon the quality of wheat.

Concerning the effect of variety upon quality, it is well known that different varieties, grown in the same locality, may be very different in any and all qualities. We have, for instance, on the University farm at Lafayette, the Dawson's Golden Chaff, and the Velvet Chaff varieties, grown under the same conditions for many years. The former is a rather soft, whitish wheat, containing, in 1905, 10.48 per cent of protein, and the latter a rather hard, reddish wheat, containing 13.71 per cent of protein. In the same year the greatest difference in protein content among 59 varieties of wheat tested at once station was 4.58 per cent; the lowest, Earl's Prolific, testing 10,11, and the highest, Treadwell, testing 14.69 per cent of protein. In this case, however, it is probable that both varieties are not thoroly acclimated. At the Ohio Station the greatest difference among 42 varieties, on an average of four years,

was 2.67 per cent. Such varietal differences may be maintained, at least for many years, and perhaps indefinitely, in spite of the unifying influence of climate and soil. The existence of those and many other differences between varieties grown for many years under the same conditions, points to the possibility of improving the qualities of wheat, by continually selecting for seed wheat possessing the better qualities, and establishing new varieties by intelligent system of breeding.

Considering these varietal differences, we can readily see that a sudden and pronounced deterioration of wheat in a given locality may be brought about by extensive importation of varieties poor in quality, In our experiment station work we are constantly endeavoring to encourage the production of those wheats which possess the best qualities consistent with profitable yields, and we are conducting extensive breeding work with a view to further improving the best varieties now at hand.

The quality of the seed from year to year by the farmer, without changing the variety, also has some effect in preventing or hastening deterioration in a given locality. Seed wheat should always be carefully selected so as to use only plump, well developed and mature grain. Many of our farmers do not use proper methods of separating out the inferior seeds, and consequently deterioration proceeds from year to year, and we have what is termed "running out" of the variety.

Careless cultural methods, such as poorly prepared soil, lack of proper plant food, and untimely sowing, have more or less influence in bringing about deterioration. With the majority of our wheat growers, there is plenty of room for improvement in these matters, and every one concerned should endeavor to point out the better methods.

The time at which wheat matures, and the length of the growing and ripening periods, may be important factors in determining the quality, especially in certain seasons. Generally speaking, early heading and early maturity are desirable. Two varieties, differing in time of maturity by only two or three days, may produce grain quite different in quality, by reason of the effect of the weather during the last few days of ripening. We frequently have excessively hot, dry weather at the time of ripening, and the later varieties may suffer quite materially in the course of a day or two.

The time of harvesting wheat also has more or less effect upon quality. Cutting too green prevents the proper filling out of the kernel, and allowing the crop to stand after it is fully ripened, hurts the quality thru undue exposure to the sun and weather. The color and brightness of the grain may be especially injured in this way.

The method of curing the cut grain in the sheaf, has a more or less important effect upon the quality of the wheat, according to the condition of the weather. An immense amount of damage is done to Indiana wheat every year by exposure in shocks for from two to five or six weeks before threshing. This damage has been estimated at from five to ten per cent, and even fifteen to twenty per cent in bad seasons. The color and luster of the grain invariably suffer by exposure to the weather, either in shocks or thru standing until ov-errripe. Often blistering of the bran results, and in wet weather there is much sprouting moulding, and other damage to quality. The condition commonly known as "yellow berry" is often largely due to exposure of ripe wheat to the weather. The proportion of "yellow berry" produced by exposure was found by Lyon to be greatest in seasons unfavorable to high nitrogen content of wheat, and on soils poor in nnitrogen. The best way to cure the sheaves after they are thoroly dry, is to put them in barns or well built stacks, where as little as possible of the grain is directly, exposed to the weather.

Generally speaking, the climate and other natural conditions in Indiana are favorable to the production of wheats of more than average quality, and there is no sufficient reason why the present quality should not be very materially improved. The methods of improvement are simple enough, or, at least, considerable improvement may be made by very simple methods. From what has been said, it is quite evident that such improvement lies in the hands of the farmer, but the miller may do much to encourage him. There must be more careful attention given to the selection of varieties of good quality and early maturity.

All Boys Interested in Corn Culture Contest Should Read Personal on Page 26

OPPORTUNITY

"If I had the opportunity that some other fellow has I'd make a name for myself." Thus many a young man in every walk of life sizes up life. "If I had opportunities"—what a flimsy excuse for being a nobody! What a pessimistic outlook upon life!

"There are just as many chances for a fellow as ever, but they're a little gun shy, and you can't catch them by any such coarse methods as putting salt on their tails" says old John Graham, the packer.

"If I only had a chance I'd get an education," says one. "If I had a chance I'd own a farm" says another. "If I had a chance I'd make a fortune too" thinks most every young fellow. "Chances" are not chance—they are real open doors of opportunity.

The world is as full of opportunities as at any time in history. No person in the United States can say with truth that circumstances have shut out his opportunities. Douglas, the slave, became Douglas the statesman and orator. Booker T. Washington, the slave, became the great educator and scholar. J. J. Hill, the clerk, became the great railroad master, Lincoln, the poor rail-splitter became the greatest statesman the world has ever known. History is full of examples that should fill every youth with an ambition to be somebody.

Let no one say he has no opportunity. It is a cowardly whine, unworthy of any boy who cares to be great Scores of men and women have become famous because they picked up the crumbs of opportunity that others had thrown away.

Do you wait until some great chance comes for you to display your courage, your skill, your knowledge, your business shrewdness? You will wait in vain unless you have made daily use of every crumb of opportunity that comes your way. Every day you have a chance to show courage by telling the truth when a lie would pass, by doing right when your companions would call you a "sissy boy," by being polite and gentle when others are rude and mean toward an unfortunate. It takes true courage to be a clean, manly boy. Only the weaklings yield to the temptation to smoke the first cigarette, drink the first glass of beer, play the first game of poker when he knows his mother would not approve.

No boy can neglect doing everyday duties in a slipshod manner and be in training for a great opportunity to show his skill. No one can jump from ignorance to knowledge any more than he can jump from childhood to manhood without growth. There must be the constant desire for, and acquisition of, knowledge that comes thru observation, reading, study and conversation with those smatrer than ourselves. No man has ever become great who associated with idle bums. The spirit of work is as necessary as life itself.

You lack opportunity? You, a boy or a girl of ordinary intelligence, living in this age on the American continent? No, no. Wake up and see opportunities all about you. Have you ever made a mistake? Then rise above it by never making the same one again. That is growth. That makes moral and intellectual fibre that will stand the test when some great opportunity comes to you.

Don't let the hoot-owls of pessimism scare you into the belief that opportunity never knocks at a man's door but once. That has been disproved by scores of noted men and women. Opportunities, like the manna of the Israelites, lie thick about you but must be gathered and used today or the supply will not keep. If you fail to use today's opportunity you fail in strength to gather the supply offered tomorrow. No man can make a hog with himself with opportunity. He can t grasp more than he can use.

There are questions yet unanswered, problems yet unsolved, inventions still capable of being improved, knowledge yet to be added to, fortunes, fame, and honor yet to be achieved by those who hunger for them.—Successful Farming.

ADVANTAGES OF THE SILO

R. M. Washburn, State Dairy Commissioner of Missiour, says:

1. Silage enables cows to produce mor

1. Silage enables cows to produce more economically.

2. The silo enables a larger number of animals to be maintained on a given number of acres.

3. It keeps animals in better physical condition.

4. It prevents waste of corn stalks.

5. Silage is more conveniently handled than dry fodder.

6. There are no aggravating corn stalks in the manure when silage is fed.

7. The silo will make palatable food of stuff that would not otherwise be eaten.

8. It enables the farmer to preserve food which matures at a rainy time of the year when drying would be next to impossible.

The silo came on trial and stays on merit.

Hundreds are using Personal, page 26.

SHALL WE HAVE BLEACHED FLOUR.

Between our day and the first recorded history of wheat grown as a food has passed 4,600 years of Chinese history, and beyond that we have no record Wheat is found with the Egyptian mummies; they grew it in the Stone Age, for we find it still among the remains of th ancient Swiss Lake dwellers. It is only during recent times, however, that we have seen such remarkable progress in the methods of milling and preparing it as an article of food. The first miller, undoubtedly, plucked the berry of wheat from the stalk and used his teeth as mill-stones to grind the grist for a customer who would not be otherwise appeased. Our next advance in milling commences with the pounding or crushing of the berry by the women folk upon a stone gradually worn hollow, and from this idea with man's advance in civilization developed the mortar and pestle.

Woman and the slave were still the source of power to transform the wheat berry into a powder or meal from which must have been produced a black and unattractive bread. The introduction of the old mill-stone marks a long step in the race's development, and the power to do the grinding came from the waterfall as it rushed against the paddle-wheel and the grist-miller held an important place in the preparing of our food. But the introduction of the modern roller mill with its chilled steel rollers has caused the merchant miller to very largely surplant the grist-miller.

The study of milling is but following the advancement of the race, step by step, thru its rise from savagery for nearly 5,000 years, and it is a most interesting and fascinating study. It is interesting to note that practically all the methods from the earliest times are still in vogue today. If one desires to see milling of wheat as carried out by Abraham, he will find the saddle stone still doing duty in parts of Interior Africa; the mortar and pestle generally used in parts of the Transvaal; and so we may still see the counter-part of every age and civilization typified today in the milling of wheat.

The manufacture of flour, as now practiced in the modern roller mills, is a new industry of the last fifty years, and we should bear in mind that the men are still in the prime of life who first successfully marketed the spring wheat flour. At that time the prejudice against spring wheat and the flour produced there-from was as great as it is today against durum. How strange it seems to be told that the millers and patrons alike opposed the introduction of hard spring wheat as bitterly as they now fight the durum! Undoubtedly, in a few years, our children will read the history of the durum wheat controversy with equal surprise.

We must, however, hasten on in the channels assigned, for it is to the matter of bleached flour that we are to give some attention at this time. During the period of the development of milling from the early Egyptians to our own time we have some pretty shady transactions, but never until our own day have we found the miller going out of his field in the production of flour by a purely mechanical process and so turning it over to the public. The American miller did for a time try to adulterate flour by introducing a white meal made from corn, but the National Government soon put a stop to this fraud. It is said that the miller has at times added ground up white earth as a make-weight, and it is reported that he did try for a time to induce the poor colored folk of the South to consume a little too much wood meal or dust as an admixture of flour, but, even here, he failed, as in the end do all men who seek to deceive and defraud.

It is only during the past six years that there has been introduced the bleaching as an adjunct to the milling industry. The process, however, is no part of milling, but to the finished flour, before going into the final container, there is added a stream of gass, nitrogen peroxide. This may be prepared in several ways,—in the mills either by decomposing nitric acid, or by an electric current in a machine so adjusted as to cause nitrogen and oxygen of air to combine and produce the same product in the same manner as nitric acid is now being produced in the Chemical plant at Niagara Falls and elsewhere.

What is this gas? Newth, in his textbook of chemistry, says: "Nitrogen peroxide is a highly poisonous gas, and, even when largely diluted with air, rapidly produces headache and sickness." This is the product used for whitening or bleaching flour. Or, as the promoters of the process would have us believe, for artificially aging the flour, and to give it the same properities as are given to flour which has been stored from four to six weeks.

It has been demonstrated that the two processes, natural ripening and artificial treating of flour, are not at all alike in effect. The maturing of flour from four to six weeks, after it is milled, brings out its best qualities for bread-making, and is like the ripening of a winter-apple on storing, or the maturing of cheese after making and placing in the curing-room before being used as a perfect food product. Flour, naturally ripened, dries out, oxidizes the fat, produces a more palatable bread, and is much more perfect as a food. Not so in the case of subjecting the flour to artificial "aging," socalled.

The gas employed in treating the flour is an active and powerful chemical agent and enters into combination with the fat in the flour, acts upon the gluten, reducing its expansive properties and renders it less valuable as a nutrient for man. In other words, it changes the proteid to amids, which are of less food value. Flour which has been treated to this bleaching agent is rendered less digestible than flour not so treated. This is well illustrated with some tests with pepsin digestion. The time of digestion for the gluten was extended from five to eight hours, and in a like proportion in the baked gluten. It is said, also, the flours subjected to nitrogen peroxide fumes are never affected by mealy-bugs, or other forms of animal life, which infest flour bins. This could not be unless the product was destructive to animal life.

I might cite many other interesting experiments, but I will not take your time. When the flour is over-treated in bleaching the quality is seriously affected, and this is equally noticeable in the flavor and odor of the bread, as well as in the chemical changes. The bread produced from such flour is dry and tasteless and does not hold moisture well. I will not, however, dwell upon the question of harmfulness but turn our attention to the matter of fraud and deception practiced by many of those who use the bleaching process. I do this that I may show you that I am not alone in my views on this question.

The Pennsylvania food authorities have concluded:

"Most of the recognized preservatives used by manufacturers of products act upon the living organism in much the same way the undertaker's embalming fluid acts upon the tissues of the dead body. They harden the arteries, arrest the processes of digestion, set in motion forces that injure the health and shorten the life of the unconscious victim. For that reason the state which prohibits the use of preservatives does wisely and the consumer who declines to use articles of food containing them takes steps to lengthen his life.

Again it has been well said that:

"Every article of food that contains an adulterant, put in it for the purpose of enabling the manufacturer to make a larger profit or to meet the demand for a cheap product, costs the consumer more in the end than the purer or costlier article. A gentleman who has had some experience in eastern travel tells of a company of adventurers who wandered in a desert country for many days. They fed upon a plant which grew by the way and which satisfied the demands of appetite. But it was destitute of nutriment so that when they again staggered into civilization they were within an ace of starvation

That's the way most adulterated foods act. They satisfy the appetite but they do not nourish the body or feed the blood.

In my judgment the only real purpose of the bleaching process is to enablethe dishonest miller to deceive his customers. The promoters of the bleaching process claim that you can increase your proportion of first patent flour from 10 to 20 per cent by the use of this process. In other words, it enables them to put into the patent that which properly belongs in the first and second clears; and one miller has informed me that it has enabled certain Minneapolis millers to increase thir profits $1.00 per barrel of flour, and this by increasing the proportion to be sold as patent, and by enabling them to use cheap soft winter wheat of less value for bread production in place of Northwestern hard spring wheats.

(To be Continued)

THE DEMONSTRATION FARMS

One of the best investments made by the State of North Dakota is the money which is going to develop the demonstration farms of the state under the direction of the Experiment Station. Here is an opportunity to accomplish the greatest amount of good for the largest number of farmers in the state; to bring into every part of the state a line of experiments which will show the methods best adapted for securing not only the maximum crop, but for maintaining soil fertility and building it up so that future generations shall have, as it were, a bank account that they can draw upon instead of a bankrupt soil.

The result of experiments as published by E. G. Schollander in the "College Extension" for February gives some very interesting data for the demonstration farms, altho they have been in existence but two years.

Four or five-acre plats are used in each case, representing fair types of soil, and systems of crop rotation are developed. Careful data all collected with regard to the condition of moisture, methods of cultivation, and crop results. Already, the data as given in this preliminary report show a very wide difference in the character of the soil itself. The soils reported upon in phosphoric acid contain from .08 to .13 of 1 per cent. All are, therefore, low as compared with the soils of the state at large. A soil which has but .08 of 1 percent of phosphoric acid cannot be expected to give good results for any length of time. The use of fertilizers rich in phosphoric acid are essential in such a soil. The average for the eastern part of the state is nearly three times this amount, and on this point Mr. Schollander summarizes as follows;

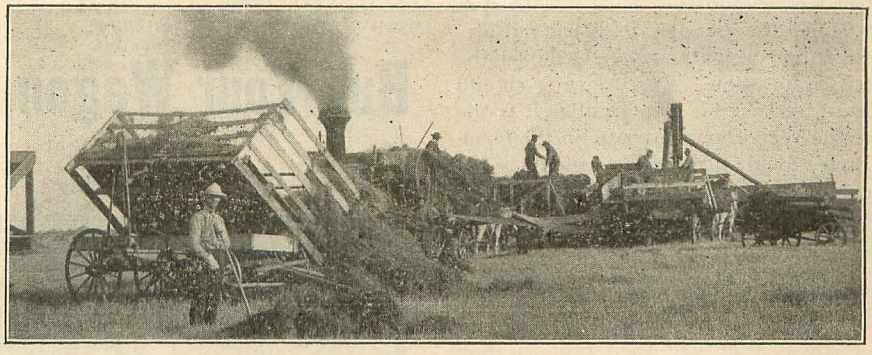
"Three of the six farms are deficient in nitrogen; four of the six are greatly deficient in humus; all six farms contain but half enough phosphoric acid; three out of the six have but one-fourth the required lime; while two others fail considerably below. In potassium they are sufficient, except at Granville; while sodium, the least valuable of them all, appears in abundance. Heavy manuring, the growth of leguminous crops, and the application of commercial fertilizers are the only means of bringing these farms to a fertile condition."

Experiments in moisture clearly indicate that the plat growing a crop of corn had more moisture in the soil during the growing season than the plats growing wheat, oats, barley and flax. This is an important factor when we consider the amount of moisture that is required to produce one ton of dry material. On this point we shall have something more to say later.

The value of manure is also emphasized in these experiments, and where wheat had followed corn there was a gain of 4.2 bushels per acre in favor of corn ground over wheat,—certainly an important matter when considering the matter of crop rotation and diversified agriculture.

HOW TO STACK GRAIN

After a person has stacked grain for a number of years he usually finds a method of his own which differs more or less from those of others. As a general proposition however stacking is carried on much in the same manner thruout the grain growing sections of this western country altho we see a vast difference in the way the stacks are built. Some shed water to perfection while others seem to soak in every drop that falls. It is a well known fact that large quantities of grain are annually lost on account of poor stacking and many of our Colorado farmers had a serious jolt in this respect last season. The first thing to be considered is the location for the stacks. It is scarcely necessary to say that a high place should be selected altho one frequently sees stacks erected on low spots. To begin a stack build a round shock on the spot intended to be the center of the stack. Set these bundles as nearly perpendicular as possible. Continue to set bundles around this center, one row at a time, giving each row a trifle greater slant than the one preceding and let the top of each bundle point directly toward the center of the stack. After sufficient rows of bundles have been set up in the manner indicated and the circumference of the butt is large enough, the outside row will be found quite slanting. A row of bundles should then be laid on the flat sides with the long end of the butts upward clear around the stack and far enough out to well cover the tops of the last row set up, always bearing in mind that the head of every bundle that goes into the stack should point directly toward its center. The second row should be laid with the butts reaching midway between the tops and the bands of the bundles of the first row. The third row may be laid in a similar manner or as some choose it may lap a little more; that is allow the butt of the third row to extend to the bands of the second row, etc. The succeeding rows to the center may lap to the ends. Start another layer and proceed as before. In order to build a good stack the center must be kept full. It is a good plan also to let the weight of the stacker come on each bundle, except on those in the outside tiers, so as to firm them and cause them to settle evenly. The first three or four tiers should not be built out, but the outside of the stack at that place should be perpendicular like a brick wall. After that each outside layer should extend slightly farther out than the one beneath it, until a height of seven or eight feet secured to make the bulge. It is not neces cured to make the bulge. It is not necessary to have the middle of the butt very steep. It should, however, remain well rounded at all times. In case it is not steep enough, each row of bundles may be made to lap to the bands or farther. This will raise the middle. If it is too full the remedy is lapping the



The Nelson Dump Rack. A Clever Device by a North Dakota Farmer

bundles less. The stacker, especially if he is not an expert, should get off the stack after each load has been put on and carefully examine it to see if the stack has remained true. Whenever the butt of a stack has been thoroly built there is very little danger of it getting out of shape as it settles. When the top is started good work counts for much. The first outside row of bundles immediately above the bulge should have a greater slant than the rows underneath it. To secure this the last layers of the butt should be laid in such manner that the first outside row of the top may rest on three rows of bundles That is to say, the last rows of the bundles should be laid as follows: The second row should just lap over the tops of the first row and the third row should lap midway between the band and the butt of the second row. In this way it will be seen that the first row of the bundles of the top will lay with the tops on the second and the third row of butts immediately underneath and thus obtain quite a steep slant. When a stack is being drawn in the long side of the butts should be turned down instead of up as mentioned when the bulge is being constructed. The top is built the same as the butt with the exception that the middle should be more steep. It is easier to stack with a fork than by hand, which is the old way and the work is easier on the stacker as well as on the pitcher. By those who are expert with a fork it is claimed that a much better stack can be constructed with than without it. Stacking with a fork is also easier on the grain than stacking by hand. After the stack has been topped out a pointed stick from six to eight feet long should be pressed into the top to hold the bundles in place. If desired, four weights may be tied over the top in addition. Every farmer should learn to stack his own grain as it is one of the very important jobs on the farm. Professional stackers can usually be secured but they are not always what they claim themselves to be. Too many farmers have had serious experience along this line. Most of these stackers know how to charge for their services but not all know how to build the kind of stacks that will shed rain as they should. Bear in mind that grain kept in a well constructed stack for from one to two months improves the quality. If it is threshed out of the shock it sweats in the bin; if stacked it sweats under most favorable conditions.—Field and Farm.

THE EFFECT OF FROST ON CORN

We hear it frequently stated by farmers and grain men, says Wallaces' Farmer, that a little frost does not hurt corn, but rather helps in hastening its maturity. We have never been able to agree with this opinion, provided that by "frost" is meant a temperature which freezes the cells of the plant. Freezing the cell simply means disrupting it, or at least stopping all cell growth. It is in the cells that the plant food is formed, and any disruption of the cell or any drying out, which inevitably occurs when the temperature gets in the neighborhood of thirty-two degrees, must necessarily derange the functions of the plan and prevent any further growth. Hence whenever there is even the slightest frost before the crop is matured there must necessarily be chaffy corn, to say the least.

On the other hand, we do not think a low temperature which does not reach the frost line does corn any damage except by arresting the process of maturing, and hence making the corn late and more liable to be caught by a later frost.

Every plant has a temperature at which cell growth begins and below which it ceases. In wheat this temperature is thirty-eight degrees Fahrenheit. We cannot state exactly what it is in corn, but probably fifty or perhaps a little over. A temperature below that of cell activity, but above thirty-two, will therefore simply arrest growth without putting the machinery of growth, so to speak, out of order. Hence the cool days in the first week of September, which prevailed over the corn belt, will not necessaryily do corn any damage further than to delay its period of maturity. When, howevre, the thermometer sinks below the freezing point cell growth must cease; and a cell once disrupted is for all practical purposes destroyed.

It follows from this that when the season is late it is better to harvest corn rahter than take the risk of frost. Farmers in Canada, northern Minnesota and North Dakota cut their wheat at a stage of greenness which would never be thought of in the country south. They can do this with safety, for two reasons: First, in that cool climate wheat cut green and shocked will not spoil as it will further south, and second, cell life is not destroyed immediately by cutting the stalk from the ground. The cell goes on developing plant food until it is dried out, whereas in the case of frost its operations cease at once.

BACTERIA AS RELATED TO SOIL FERTILITY

By T. D. Beckwith, Agricultural College, Fargo, N. D.

"It has been stated by a New England scientist that the soil is a great work shop and in the light of modern research and experiments this seems undoubtedly true.

"It sounds too incredible to believe but in an ounce of Fargo soil taken near the Agricultural college buildings there were found to be about three hundred millions of bacteria or "germs" as they are commonly called. To count such a large number would be quite impossible but there are scientific ways of estimating such results and 300,000,000 per ounce seems to be approximately correct.

Each germ is a single living organism having its own place in life and doing its own work. This work has a direct bearing on the nature of the soil and it has been found that the different methods of tilling the soil influence directly the life of these bacteria or germs either helping or hindering their growth as the ease may be. A little reflection will show you how necessary it is to properly till the land in order to cause these soil germs to multiply and work to the greatest advantage to the farmer.

"Since bacteria are present in the soil in such numerous quantities, let us consider them in their various and more definite relationship to the farmer.

"Plants that we raise in the shape of all kinds of crops must have food. This food must be gotten either from soil or air. Among the most important of these plant foods are potash, lime, phosphoric acid and nitrogen and if we want to get the best crop we must have the quantity of each of these necessary constituents in right proportion and amount. Potash, lime and phosphoric acids may all be replaced with comparative cheapness but nitrogen is much more expensive. Nitrogen fertilizers are becoming more and more difficult to procure as the visible supply becomes less. Nitrogen is found in sufficient quantity as yet in North Dakota but at the present rate and by following out the present methods of farming it is only a question of time until it will become necessary for our farmers to add sources of nitrogen to the soil. Already the first signs of this need are apparent in the changes that are seen going on in Dakota farming. We are becoming more and more diversified as the wheat raising possibilities of the country are becoming lessened.

"Nitrogen then, is the great plant food. But common air, the air that we breath constantly is four-fifths nitrogen. Since it occurs in such large quantity all round us and circulated as part of air thru the soil how is it that it is not used by the plants? If seems strange that the food needed by crops most should be useless for their growth even when it is present in such large quantities, so constantly. Yet such is the case. It has been discovered that nitrogen occurring as it does in air in the form of gas, is quite unavailable as plant food. It must be changed over into another chemical form so that it exists not as a gas—nitrogen, but as certain chemical compounds known as nitrates and certain other combinations of like nature. Nitrogen usable as plant food is constantly being extracted by the crops and must be rereplace the nitrogen in soil—to build it up so that it shall continue rich in plant food, is found centered in certain ones of these millions of germs that are found in every ounce of the upper crust of dirt. It has been discovered that certain kinds of these countless bacteria have the power of taking nitrogen from air and other sources and changing it over—building it up so that it shall be in a condition for plants' use for food so that they can grow better. These bacteria then, are nature's means put at our disposal in order that we may keep the nitrogen in the soil up to the necessary standard of strength and usefulness. These germs are very delicate, many of them, and are sensitive to the various methods of tillage used. If the farmer treats his land rightly, tilling it properly, rotating his crops to the best advantage, unconsciously he is fostering these helpful bacteria and thus obtains better returns from his crops.

"But these kindly germs of the soil have other uses besides building up nitrogen to make nitrates and other allied plant foods. Every bit of manure that you put on your land to fertilize it, has to be changed over so that the crops may use it. All sorts of organic fertilizer that you use as crops or stubble that you turn under has to be broken down in order that the crops may assimilate it. When manure is put on the soil you know that it turns color in time—it blackens and as you say, "humus is formed." Plants have no power to use the manure, top dressing, mulch or whatever it may be, and here again the bacteria of soil have their use. It is thru their agency that manure is made available for the use of the plants. The germs attack this fertilizer as soon as it comes in contact with the soil, using certain parts of it for their own food. As they work in this fashion they

cause gaseous nitrogen and also that pungent smelling gas called ammonia to be given off. Ammonia is merely a gaseous compound of nitrogen. By this action then, the germs of the soil cause nitrogen and nitrogenous compounds to be given off in the soil. This change is what is known as denitrification.

"These products of this action of germs or manure, however, are still not available as plant food. Crop can not use them and if they continued to exist this way no good whatever would come from them. The plants would starve for nitrogen food and these gases would merely pass off into air. Still other changes are necessary before we obtain proper plant food. So another set of operations takes place. The nitrogen and ammonia given off is seized upon by still other bacteria which change it, again building it up as we mentioned above until it becomes a nitrate and as such is available for crops to use. This chemical change due to bacteria is known as nitrification and goes hand in hand with the previous operation we spoke of as denitrification. Denitrification and nitrification then are both necessary in order that manure may become so changed that plants and crops can use it. If it were not for this, the use of manure would be merely mechanical and no nitrogen food material would be made, available from it for our wheat, oats, etc. It becomes evident then how much the farmer is indebted to these friendly germs of the soil whose presence in healthy condition he must have in order to obtain good results from his farm.

"Let us consider these germs as to their position for a short time. It is known that about two-thirds of the total number of bacteria present in soil are found in the upper foot and of the remaining one-third, by far the greater part are found in the next foot. In other words below two feet in depth comparatively few soil bacteria are found. The reasons for this position are obvious. These soil germs require oxygen to live just as higher forms do. The greatest amount of oxygen as the air circulates thru the soil is found in the upper portions and in those parts therefore is the greatest growth of bacteria. The various methods of treating soil effect the upper six or ten inches and thus have greater influence on the bacteria. It is a common practice for North Dakota farmers to burn great quantities of straw thruout the state. This is an enormous waste of good fertilizer, for when you burn all the straw you allow to escape into the air quantities of the ingredients that are necessary to plant growth. It causes an enormous waste of nitrogen, potash, phosphoric acid, etc., and it is a waste which North Dakota, rich as its soil may be, can ill afford. But this is not all. The heat from this great fire acts as any sterilizer would naturally—it kills all these bacteria that are in that soil where the fire is. In other words, it sterlizes the soil and so the farmer is deprived of his friends, the bacteria in that locality. True they will grow in again for they will spread from the edges of that burned area toward the center of the plot but that takes time and depends on moisture conditions, etc. So in addition to losing lots of fertilizer, the farmer who burns his straw, unwittingly kills out his most valuable allies in that spot on his farm.

"But in case you do burn your straw and so undergo all this loss merely because it saves time and energy, don't let the ashes lie in one spot. Distribute them else you have too much ash at one place and the wheat shows too much straw and not sufficiently filled out in the heads. This is due to the great amount of potash left in that place. But best of all, turn this straw under and so put back into the soil part of what you have taken out. The bacteria will rot the straw, change it over into good plant food and your crops can use that food over again.

"These bacteria we have said need air and some moisture. Too much moisture retards them. Therefore, constantly tilling and turning over the surface of the ground is vitally important to their best growth. Also in this connection the underdrainage must be considered for by such means you do away with excess of water and thus give the soil bacteria better growing conditions. Right here let me speak of the manure question. Remember it has been stated that air and the right quantity of moisture must be obtained in order to have soil bacteria thrive. Let us apply that reasoning right here. While the manure is on the pile, you do not want it to decompose and change. If you leave it loose and dry, you know how that sort of sharp odor of ammonia is given off. That is just so much plant food being given off into the air and lost. That loss is caused by the bacteria working. But you want to stop their action at that time. The lesson to draw is this. Compact the manure—pack it down, let hogs run on it and in addition occasionally wet it down thoroly. This will tend to stop the bacterial action until it is spread. The proper treatment of manure in order to get the most out of it is also a very important consideration from the standpoint of soil germs. Incidentally let me say that you will get the best results by throwing the manure as fresh as may be on the land, for then the least possible loss shall have taken place.

"Soil bacteria need air and moisture. By giving them lots of air and the correct amount of moisture in the fields due to proper cultivation you help them, in the manure pile by giving them little air from composing the pile and too much moisture by wetting it down occasionally, you hinder their growth when it is not desired and thus save the manure at its highest efficiency until it is needed.

"Let us consider another point briefly. The reaction of the soil must be considered for those germs are delicate. They cannot endure much acid or much alkali. If your land is sour they cnanot thrive. The same is true if it is alkali either wholly or in spots. The remedy for sourness is lime which naturalizes the acid. Therefore use lime if it needs it. If it is alkali, manure and leeching will help, for manure makes humus which neutralizes alkali and by leeching the excess of alkali is dissolved out and is carried away by the water. If you suspect that your soil is acid or sour buy a cent s worth of blue litmus paper at the druggist's take a knife and make a little slit in the earth, stick the paper in that slit and then pack the soil around it lightly. After five or ten minutes take the paper out and, if the soil is acid the paper will have red spots on it. This is a convenient, simple and fairly sure method of detecting acidity in soil.

"We might speak of numberless other factors with regard to the bacteria of the soil which concern farmers but the time is too short. Enough has been said to give some idea of the importance of the soil bacteria in their rlationship toward fertility of the land. The subject is comparatively new and many phases of it are not understood at all but we do know that the cultivation of the soil has very much to do with the vigor and growth of its bacterial flora. Proper tillage, underdrainage, temperature, mulching, liming, all are important. We know that they all help the land but if we look further we perceive that, to a great degree, they help the land because they stimulate the bacteria of the soil to greater and more vigorous growth and this in turn acts to keep soil fertility up to the proper standard."

The high prize in life, the crowning fortune of a man, is to be born with a bias to some pursuit which finds him in employment and happiness.—Emerson.

HOW TO BUILD AND USE THE SPLIT-LOG DRAG

Office of Public Roads of the United States Department of Agriculture Issues a Bulletin on th is Simple Road-Building Device.

One of the latest publications issued by the Office of Public Roads of the United States Department of Agriculture treats of the split-log drag, an implement which numerous experiments have conclusively shown to be the greatest possible boon to keep earth roads smooth and passable. Because of its simplicity, its efficiency and its cheapness, both in construction and operation, it is destined to come more and more into general use. With the drag properly built and its uses well understood, the maintenance of earth roads becomes a simple and inexpensive matter.

At the present time there are approximately 2,000,000 miles of earth roads in the United States. Some of the most important of these roads will eventually be improved with stone, gravel, and other materials. Many others which are equally important cannot be so improved on account of lack of funds or suitable materials, while still others will not require such treatment because of the light traffic to which they are subjected. For these reasons the majority of our roads must be maintained as earth roads for many years to come. This must be done by inexpensive methods and the split-log drag will be a powerful aid if economy is the criterion demanded.

In the construction of this implement, care should be taken to make it so light that one man can lift it with ease, a light drag responding more readily to various methods of hitching than a heavy one, as well as to the shifting of the position of the operator. The best material for a split-log drag is a dry red cedar log, tho red elm and walnut are excellent, and box elder, soft maple, or even willow are superior to oak, hickory, or ash. The log should be between 7 and 10 feet long and from 10 to 12 inches in diameter at the butt end. It should be split carefully as near the center as possible, and the heaviest and best slab chosen for the front. In the front slab 4 inches from the end which is to drag in the middle of the road bore a 2-inch hole which is to receive a cross stake. At a distance of 22 inches from the other end of the front slab, locate the center for another cross stake. The hole for the middle stake will be on a line connecting and halfway between the two. Then place the black slab in position and from the end which is to drag in the middle of the road measure 20 inches for the center of one cross stake and 6 inches from the other end locate the center of the opposite stake. The hole for the center stake should be located halfway between the two. All these holes should be carefully bored perpendicular or at right angles to the face of the split log.

If these directions are followed it will be found that when the holes of the front and back slabs are brought opposite each other, one end of the back slab will be 16 inches nearer the center of the roadway than the front one. That gives what is known as "set back." The stakes, which are 30 inches long, will hold the slabs this distance apart. When the stakes have been firmly wedged into their sockets, a brace about 2 inches thick and 4 inches wide may be placed diagonally to them at the ditch end of the drag. A cleated board is placed between the slabs and across the stakes for the driver to stand on.

By many it is deemed best to place a strip of iron along the lower face of the front slab for a cutting blade and to prevent the drag from wearing. The drag may be fastened to the doubletree by means of a trace chain. The chain should be wrapped around the left-hand or rear stake and passed over the front slab. Raising the chain at this end of the slab permits the earth to drift past the face of the drag. The other end of the chain should be passed thru a hole in the opposite end of the front slab and held by a pin passed thru a link.

For oridnary purposes, the hitch should be so made that the unloaded drag will follow the team at an angle of about 45 degrees. The team should be driven with one horse on either side of the right-hand wheel track or rut the full length of the portion to be dragged, and made to return in the same manner over the other half of the roadway. Such treatment will move the earth towards the center of the roadway and raise it gradually above the surrounding level.

The best results have been obtained by dragging roads once each way after each heavy rain. In some cases, however, one dragging every three or four weeks has been found sufficient to keep a road in good condition.

When the soil is moist but not sticky the drag does its best work. As the soil in a field will bake if ploughed wet, so the road will bake if the drag is used on it when it is wet. If the roadway is full of holes or badly rutted, the drag should be used once when the ground is soft and slushy. This is particularly applicable before a cold spell in winter, when it is possible to so prepare the surface that it will freeze smooth.

Not infrequently conditions are met which may be overcome by a slight change in the manner of hitching. Shortening the chain tends to lift the front slab and make the cutting slight, while a longer hitch causes the front slab to sink more deeply into the earth and act on the principle of a plow.

If a furrow of earth is to be moved, the doubletree should be attached close to the ditch end of the drag, and the driver should stand with one foot on the extreme forward end of the front slab.

Conditions are so varied in different localities, however, that it is quite impossible to lay down specific rules. Certain sections of a roadway will require more attention than others, because of steep grades, wet weather springs, soil conditions, exposure to sun and wind, washes, etc. There is one condition, however, in which special attention should be given. Clay roads under persistent draggings frequently become too high in the center. This may be

corrected by dragging the earth towards the center of the road twice, and away from it once.

There is no question as to the economy of this roadmaking implement, either in first cost or in operation. In six counties in Kansas in 1906 the cost of maintaining ordinary earth roads, without the aid of the split-log drag, averaged $42.50 a mile. These figures were furnished by Professor W. C. Hoad, of the University of Kansas, who secured them from Official records of the counties.

Some figures furnished by F. P. Sanborn and R. H. Aishton, General Manager of the Chicago and Northwestern Railroad, have revealed the wonders of this simple device. Mr. Sanborn said, "the least expense per mile per annum for split-log dragging was $1.50, the greatest a little over $6, and the average expense per mile for 5½ miles a little over $3. I have lived along this road all my life and never in 40 years have I seen it freer from mud and dust, despite the fact that during the season we have experienced the extremes of weather conditions."

The testimony of Mr. Aishton is equally strong. Learning that a township in Iowa had been making an investigation of the split-log drag and had been experimenting with it for a year on 28 miles of highway, he sent an agent to secure information. It was reported that altho the town board had paid the cost of making the drags and of hiring men to operate them, the total expense for one year averaged but $2.40 a mile, and the roads were reported to have been "like a race track" the greater portion of the year.

AN EXAMPLE WORTHY OF IMITATION

At a recent county fair, says the Twentieth Century Farmer, in Kansas twenty fat steers were entered by as many cattlemen of the county to compete for fat cattle prizes amounting to $500. These steers, it is stated, averaged in weight over 1,800 pounds, the largest weighing 2,160 pounds. They were sold on the fair grounds at 7 cents per pound.

If county fairs thruout the country would get up some such contest amongst the farmers and feeders there would result a good practical lesson in feeding, and in the kind of animal best suited to secure the largest gains on feed consumed. It is just such practical examples as these that makes the county fair a valuable institution in the communities where organized.

Any neighborhood of feeders can prepare a big show of fat cattle when a little incentive is put into the enterprise, such as a few hundred dollars for prizes. The cattle feeding industry is one of the most important carried on in the corn growing districts, then why not make it one of the leading attractions at the county fairs?

It is not necessary to leave this work entirely to the agricultural college and experimental station or the big cattle feeders of national reputation. Commence this training at the county fair, and provide for a class of fat cattle at a premium cost that will cause the cattle men to "sit up and take notice." Introduce it at your next county agricultural society meeting and provide for this class in your premium list.

STACKING WHEAT. WHY NOT?

Field and Farms discusses the question of stacking grain and says some things worth considering, thus:

I cannot understand why more of our Colorado farmers do not resort to the old-fashioned method of stacking their grain instead of trying to thresh it out of the shock as is the general custom. They seem to think they must get a lot of hands together, with a team, hayrack and wagon for each man and thresh out of the shock. Just why the majority do this I cannot say but only know they do. From the hiring standpoint it is the most expensive way. It also furnishes a short threshing season for the owners of machines. It makes all hands work like sixty when the rush is on but when it is off there is nothing for help or machines to do. The wheat grower has his work done up in a hurry, if the weather is favorable, but it has cost him a lot of cash to do it. I am just old-fashioned enough to believe in stacking small grain. And I believe some other Colorado farmers who lost a large percentage of their grain by sprouting last year have come to the same conclusion. It is taking too big a risk to wait for uncertain threshers to come around when everyone wants his work done first to get it out of the way.

The lumber trust, according to the North Pacific Rural Spirit, of Oregon and Washington, is making a big howl because the railroads have increased the freight rate on lumber from Pacific Coast points East about 10 per cent. The lumber trust seems to forget that they have increased the price of lumber to consumers nearly one hundred per cent the past few years, and that the consumers were absolutely helpless because of the comibnation made between the lumbering concerns prior to the raise. Some people don't like to take their own medicine.

See Personal on Page 26.

PLANTS NEED AIR

All people realize the fact that plants need various kinds of plant food and that they need water at their roots; but there are very many people that do not realize that plants need air at their roots as certainly as they do air about their tops. The non-appreciation of this has led to many failures in the growing of certain crops, and also to the use of land unadapted to the growing of cultivated crops. Some soils are so heavy in clay that they pack after every rain. The planter puts in a crop of some kind and wonders at its slow, almost imperceptible growth. If he goes out into the field after a rain he notices a light crust at the top. This crust is impervious to the air and does not permit it to enter the ground. This kind of a crust is found only on ground that is too heavy in clay to be suitable to the growing of crops where the bare ground must be exposed to the rain, wind and sun. Such soil must be used for forestry or for the growing of permanent grasses where the surface will always be protected from air and sun. It is possible to use such soils for ordinary crops only if the cultivation to break up the crust is made a practice after every rain. This too greatly increases the labor. Some soils are being farmed that would give a better return in timber that requires a heavy clay soil. The writer has in mind a piece of soil on which oak and hickory are growing luxuriantly. It is of such a heavy clay composition that a ditch dug ten years ago has never been able to cover itself with grass, tho the filling in the ditch is on a level with the rest of the soil. The surface has remained glazed for all these years, and no plant has been able to get a start in it. An orchardist known to the writer lost several fine apple trees because his hogs in the orchard tramped the clay soil so hard around the trees that no air could get in. The death of the trees followed the same season. In European countries more effort is made to create a condition in the soil in which air will be always present than in this country for the reason that we farm here on such a large scale that it is thought unprofitable to go to great labor or expense to change the condition of a soil. Where land is high in price and labor cheap top dressings of sand are given to clay ground. The frosts and the farm implements work the sand into the clay and the nature is changed to a great enough extent to make it possible to keep land in cultivated crops that otherwise would have to be left to the growing of crops less profitable. As land advances in price in this country much of it that needs such treatment will receive it. It may be said, however, that it takes a large amount of sand to have much effect on a heavy clay soil, as the nature of clay is to take in a great deal of sand and still retain its sticky character. This is illustrated on soils so largely sandy that the owners declare there is no clay in them, yet go out after every rain to break up a crust. The formation of the crust indicates the presence of clay. Clay land that is poorly drained is unsuitable for the growing of such crops as corn. Only recently the writer was looking at a large corn field on a great flat piece of country, the water finding its way out of the soil only thru the side open ditches. Evidently tile draining had not been attempted. The corn stood about two inches high and gave every indication of keeping a month behind the season, while corn in land of good mechanical condition was growing well.—Farmers' Review.

THE TIME TO PLOW CLOVER SOD

An Illinois correspondent writes:

"Would it be better to turn clover under by breaking deep late this fall, or wait till next spring, with the object of putting it in corn? This clover was sown in the wheat in the spring of 1906."

In that latitude we would by all means break this clover sod in the fall and plow pretty deep, for the following reasons: Late fall plowing will enable the farmer to get the full benefit of the aftermath of his clover. He can pasture as close as he likes, for there will be no clover to winter kill. He will lessen the danger from insects in his corn next year. This is not a very serious danger where the stand is pure clover. Where there is timothy with it, especially where much timothy is grown in the neighborhood, there is increasing danger every year of attacks of the little snout beetle.

The main benefit of this late fall plowing is that it brings the farmer into partnership with the forces of nature, and thus puts his land in first-class physical condition. Besides, there is usually enough to do in the spring of the year without plowing clover sod.

Where the land is in blue grass, or has been in clover and timothy for some time, and pastured, the necessity for fall plowing is much more urgent than in the case of clover. There have been great losses this year all over the corn section from cut worms, snout beetles, especially the smaller variety, and from wire worms. This danger cannot be avoided altogether by fall plowing, but it can be to a very great extent. In fall plowing we can plow deep with much greater safety than we can in the spring, and the farmer may well take the opportunity of making the soil of his farm an inch deeper.—Wallaces' Farmer.

There are in Iowa at the present time 170 farmers' co-operative grain companies, with a total membership of 28,000 and a capital of $2,000,000 invested in elevator properties. A conservative estimate of the combined resources is $50,000,000. Against all this the grain trust will begin a "relentless war of extermination." The farmers' elevators have, it is proven and admitted, raised the price of grain in Iowa from two to four cents on every bushel, thereby putting thousands of dollars into the pockets of the farmers instead of stealing it therefrom to build palaces and live in riotous luxury. The farmers' elevators have stimulated trade wherever established and have put new life into many towns supposed to be dead. Bank deposits have been increased, merchants have enjoyed a larger trade, laboring men have been more in demand and times generally have been more prosperous wherever the co-operative companies entered the field. In fact the farmers' elevators have proven a boon to every community where they have been established.—Exchange.

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It is interesting to note how much more thought is now given by farmers to new problems in agriculture than was the case a few years ago. It is a hopeful sign—the break of day for a new era.

It is interesting to note the miller bitterly opposed the hard spring wheats when they were first grown and was almost as bitter in his denunciation of them as he now is of the durums. This seems strange now when the same wheat commands a premium. Will we have a like history for the durums in years to come?

The outlook for a good crop in the state never was brighter than at this writing. Such is the report from all parts of the state. The rain and cool weather have given the grain a good start and ensured its standing thick on the ground. It is not, however, too late for considerable dry hot weather and this should be borne in mind.

While the rain for May came on many days the total for the month was not large at Fargo. The station reports a total of three inches while at Moorhead two miles away the total for the month is 4.16 inches. A mile northwest of the college the rainfall was even less than at the A. C. The land is not too wet, still low places begin to show the effects of wet weather.

The state could do much by proper encouragement to farmers who would rid their heads of tuberculosis. Let them exempt from taxation any strictly dairy herd for five years if it could be shown by the tuberculosis test that every animal was free from the disease. Would this not be more feasible than waiting until the state is overrun with the disease and appropriate large sums to have such herds destroyed?

Last winter was hard on the trees and shrubs, not because of the severe cold but the unusual warm days in March when the sap started, life renewed only to be blighted by cold severe enough to damage many a tree and plant. Do not be discouraged however, but let us have more trees, more forests, more plums, cherries, currants and other small fruits. It will make our homes more attractive and give variety.

We must not forget that the continuous growing of wheat has lowered seriously the productivity of our valley soil The soil itself is not depleted in fertility but rather put in bad condition and the plant food no longer available as it was in early days.

Proper methods of agriculture, however, will change all this and render the soil fit for heavy crop production—not wheat growing, that day is now past.

Not a tuberculine animal should be permitted to come into the state and every possible means should be used to eradicate the disease for we already have too many cows afflicted with this dread disease to be communicated to man. It has been shown that the milk is an excellent medium for spreading this disease and now it is known that the germ lives for a long time in the butter. We can not exercise too great care in these matters.

I hope you did not forget the garden in the rush. If peas, corn, beans and lettuce and radishes as well as cabbages, tomatoes, etc, were put out do not think they will thrive without some attention. What is better than good peas fresh from the garden, well cooked and seasoned, besides they take the place of meats and then comes the corn, green on the cob, to be made into corn puddings, etc. Keep up the garden, see that a few hours are spent in proper cultivation and it will be a profitable sport on the farm.

Taken as a whole the valley promises better than for the past five or six years when the season has been too wet. The farmers should not think, however, that the time for drainage in the valley is past. Such is not the case but each year will more and more emphasize the need of thoro surface drainage and then this will be followed by tile draining. Such has been the history in Illinois, Iowa and other agricultural states and the valley is no exception. Surface drains can be built best in dry years and the work should be pushed rapidly forward.

In 1906 North Dakota produced 72,534,000 bushels of wheat, more than any other state in the spring wheat belt and takes first rank as a wheat producing state and paid out more than $7,000,000 for farm labor.

Not a bad showing and yet we are to see far greater things in the near future. Every bushel of that wheat should be converted into flour within the state. Here is a great opportunity for building up a great manufacturing industry. If all the wheat bran and shorts were then fed within the state what a future North Dakota would have! Then, instead of 80 creameries we should have 500 supplying the best of butter to other states.

Every acre of tillable land in the Red River Valley will, when properly drained be worth not less than $100, and this in the near future. There is no more fertile land in America than this valley and we shall see one of the best agricultural regions in the country in a few years. Diversified agriculture, gardening, and dairying will be what will be practiced. Wheat will as it should be remain the money crop but not 15 bushels per acre. but 30 to 40 bushels should be the yield When put in wheat once in five years and under a proper system of cultivation 40 bushels will be what to expect. Why not? In New York farmers get 40 to 48 bushels who farm well and we have a more fertile soil.

There are several kinds of durums, not all equally good for flour and bread production. This should not be lost sight of and when durums are to be grown only those selected known to be best. Thus far the two most promising are the Aronautka and Kubanka. If you have a different seed make sure that it is a flour-producing wheat. Goose wheat sometimes referred to is not the same product and entirely different in properties and should not be grown.

Velvet Chaff, known under various names has not been a promising wheat, altho not a durum yet farmers should go slow in growing it unless it will meet the millers demand. The miller must, however, on his side be fair and ready at all times to aid the farmer.

The question is often asked by farmers and others with regard to analyzing milk to see whether it is free from tuberculosis germs. Such an analysis is almost worthless. A chemical analysis would rarely ever give any conclusive evidence, neither would a bacteriological examination. In the first place the udder is not often affected as compared with other parts of the body. Still if

there is an animal in your herd you are in constant danger. Why? Because the cow licks her sides and leaves the sputum and germs in the hair and when these dry they are liable at any time to fall into the milk and grow rapidly. The innocent victims drink of the milk and the dread disease is liable to attack you. No afflicted animal shouldbe left in the herd. So long as one is present you are not safe.

North Dakota has an area of 70,195 square miles or 44,910,080 acres of fertile land the most of which can be brought under cultivation. Some in the western part of the state will be brought under irrigation during the next few years and it will then become one of the most productive portions of the state. Other parts will be given to dry land farming and the eastern half under general methods of cultivation. It is 400 miles across the state and we find great diversity in soil and climate and in dealing with the problems of the state this should not be lost sight of. Remember that North Dakota has an area geater than all New England and then we can understand why the problems in Pembina county and Adams differ as much as those of Aroostook county, Me., from those in Connecticut.

What kind of wheat shall we grow is the question now frequently being discussed. Grow the wheat that gives the best yield and at the same time will produce the best flour.

A wheat may be a good yielder but poor flour producer. If so, then it is not to be recommended. In the eastern part of the state fife and bluestem wheats are the best and command a premium over other wheats. Farmers should bear this in mind and endeavor to improve these by selecting good seed and aid in keeping up the high standard.

In the western part of the state the problem is quite different. Here you have a different soil and less rainfall and the fife and bluestem fail to yield well. Experiments indicate that a durum does best; yields two or three times as well and makes a good crop in a dry year when the other would fail. Then why should these not be grown and used? The millers may object—but there is no denying the fact that durum will make good flour and good bread.

Potatoes are coming to be quite an important crop in parts of the states nearly 2,000,000 bushels being our present annual crop and nowhere are better potatoes grown than in this state. They command a good price as far south as New Orleans and with the opening of better means of transportation to the south we should find an ever increasing market. Ward, Ransom and Cass counties at the present time lead in potatoes. In studying the agricultural condition we should not fail to take into consideration the parts of the state best adapted for a given crop. This can often be determined by seeing when the crop is taking first rank. If in this way we study barley we shall find in production, Richland, Pembina and Cavalier counties lead in the order named.

If we want to develop our own state industries we should be loyal to the state. We can all use flour grown in the North Dakota mills in our home. If we do this we shall get a better product than that imported. It will be stronger in gluten, more nutritious and make a better loaf of bread and keep its moisture better. At least that is the experience of the writer. Let us insist, however that they quit bleaching and give us the straight product. I do not mean by that "straight" flour but patent such as we pay for. If they want to sell "straight" flour, long patent or clears let them all be truthful and say so.

HOW THE NATIONAL FORESTS SERVE THE PUBLIC

"The Use of the National Forests," a publication just printed by the Department of Agriculture, is a brief, clear manual for public information as to the forest policy of the National Government.

It is too true, as the short preface to the public says, that "many people do not know what National Forests are. Others may have heard much about them, but have no idea of their true purpose and use." It is the object of this publication to explain just what the National Forests mean, what they are for, and how to use them.

In the first place, it is explained how the Forests are created and how their boundaries are drawn. Next, their direct use and value are shown from the point of view of the homeseeker, the prospector and miner, the user of timber, the user of the range, the user of water, and other users of Forest resources. Third, it is shown how the Forests are intended for use, for the production of usable products, and for the establishment and maintenance of homes; how on all of them the timber is protected from fire, the water flow is kept steady, the forage on the range is increased and guarded from abuse; and how, in addition, they serve as great public playgrounds and as breeding places and refuges for game. Finally, the management of the National Forests is described.

Here it is that the great usefulness of the Forests is brought out most clearly and strikingly; for the Forests are managed by the people in their own interests, and every means is used to meet the desires and wants of all Forest users half way by dealing with them in the main directly on the ground and in all cases with the utmost practicable dispatch and freedom from red tape.

In a word, the special interest of this manual lies in its showing that the Forest policy of the Government, both in principle and in practice, is for the benefit of the ordinary man, for the benefit of every citizen equally. There is still a tendency to think of the National Forests as "preserves" closed to use, and to leave the public lands exposed to unregulated individual exploitation. Where these misapprehensions still prevail "The Use of the National Forests" will go far to correct them.

The book is written by Mr. Frederick E. Olmsted, whose intimate knowledge of conditions in the West and the policy under which the National Forests are managed especially fits him to deal with the subject.

BUNDLE RACK

A new advertiser this month is J. C. Nelson, Grandin, N. D., who advertises a new form and kind of dump bundle rack that promises to be a great time and labor saver. Farmers will find it worth while to look into this matter when it is so hard to get the necessary help in thrashing. Each rack saves, it is said, at least one man. Good illustration of the rack is given in this issue.

GRAIN PRIZE CONTEST

I offer the following prizes for the largest and best collection of grains and grasses raised in North Dakota during the year 1908 and exhibited by any one person or firm:—

First prize $200.00
Second prize 125.00
Third prize 75.00

The different grains and grasses should be equal in quantity to an ordinary bundle and the grains should be stripped.

These exhibits must reach Bismarck not later than August 20, '08, and should be shipped by express so as to prevent delays. Express charges will be paid by this department.

All grains and grasses prepared and shipped for this contest should be packed in boxes, using as light weight wood as possible, and the boxes should have plenty of air space so as to prevent the exhibit from becoming damp or moldy.

W. C. GILBREATH,
Commissioner of Agriculture.

Pure Food Department.

All Matters Pertaining to Foods will be Discussed in this Department

ABOUT BLEACHED FLOUR

Millers and bakers are just beginning to realize some of the evils which have crept into the flour business as the result of the introduction of bleaching. At the annual meeting of the South Dakota Millers, President George P. Sexauer is reported as having "declared bleaching the greatest curse which had ever befallen spring wheat millers While a temporary benefit, it had helped the southwestern millers in securing the desired color for their flour and had permitted a blending of flour among spring wheat millers that would not have otherwise been possible."

At the Annual Convention of the Indiana Association of Master-Bakers, Professor Barnard said:

"At the present time most millers are bleaching flour, a practice unknown until recently, and many millers are mixing flours of different grades of wheat. This latter practice is not new, but a decided variation has been introduced by the employment of durum wheat in blending, and, since durum wheat is decidedly different in character from the better known and more suitable wheats, flour so made will not produce the results that the baker anticipates.

. . .

Color is an important characteristic in determining the commercial value of flour, and the baker in choosing flours is largely influenced by its appearance in making his selection. Since the trade has so long recognized the fact that a clear white flour is more valuable in bread-making than a flour not so white, it seems to me that there can be no question but that the bleaching of flours takes away in a great measure the ability of the baker to judge of the character of the flour he is purchasing.

Over-bleaching without a doubt weakens the dough and diminishes the number of loaves of bread per barrel.

The miller who is bleaching is, however, able to combine Kansas and spring wheat flours, and so far as appearance goes, put it upon the market as a product of the Minnesota mills.

There is no question in my mind but that the baker who buys a bleached flour, unaware of the fact that it has been so treated, is subject to an imposition that is a violation of the law."

At the same Convention, Mr. Casper, a miller and baker. said:

"The chemical bleach is for one single purpose. As the agent of the Alsop Process told me, you can make more patent flour. I do not mean that it would make the quality better. When you take the cream off the milk, there is more bulk left in the milk than there is in the cream, and when you get the best of the middlings out of the wheat, you have everything that the word "patent" implies, and it is mostly used to make a quantity of patent flour which will not expand as much as the higher grades."

In a suit brought by the promoters of the process of bleaching against one of the large flour mills at St. Louis, the answer, as filed, asserts that the gases used in the process of bleaching, including nitrogen peroxide, are deleterious, dangerous and injurious to human health and constitute unnatural and highly dangerous method of artificial aging and bleaching flour."

And they further set forth, "that the use of any and all of the chemicals, gases, acids and adulterants, aforesaid, for the purpose of aging and bleaching flour, constitutes and is a fraud perpetrated upon the customer or purchaser, in that this is their intention to make the flour appear to be seasoned or properly cured flour, when, in fact, the use of such chemicals, etc., destroys the nutritive qualities of such flour and causes the same to deteriorate more rapidly than Nature intended."

The defendant further says: "That such practices are intended to cheat, defraud and deceive the public, and are resorted to purely for commercial purposes and for the purpose of making the less saleable and less wholesome portions of the wheat grain appear to be that portion thereof which constitutes the heart of the grain."

It is thus evident that the sentiments, which have for a time seemed to be wholly in the favor of the bleachers, are now turning against them, and probably will continue to gain in strength, as the public become better informed, as to the true evils. It is not believed that any combination of persons or corporations, which have for their sole object the defrauding of the public and the debasing of food products, or the practice of deception in handling food products, can ever hope to be other than held in ill-repute by their fellow citizens.

LEGITIMATE AND ILLEGITIMATE DRUG STORES

The work of the past year has demonstrated very clearly that there is more than one class of drug stores. This has seemed to emphasize more fully the necessity for raising the educational requirements which enables one to become a registered Pharmacist.

The two classes of drug stores, in a prohibition state, cannot be better described than in the words of Dr. Beal in a paper before the Ohio Pharmaceutical Association wherein he says, "All drug stores look pretty much alike to the general public, tho to those familiar with their internal economy they are known to be divided into two classes which are as widely separated from each other as light from darkness, and honor from dishonor. Those of the first class—which is and always has been the largest class—are conducted by men of probity and intelligence, striving to gain a livelihood by means void of offence to the laws of either God or man and jealous of the good name of their profession. Those of the second class are conducted by men who pursue Pharmacy with purely mercenary motives, entirely careless of its honor and reputation and using its good name and fame merely as a disguise for a disreputable business."

"Drug stores of the second class usually carry a small stock of real drugs but may have a good supply of patent medicines, but the principle business seems to be conducted, in the annex or back part of the store, and here will be found the most expensive stock and indicates clearly the reason for existance of such drug stores.

"The chief difficulty is, however, in the fact that often such stores are presided over not by men most competent to safeguard the health of the public. It is rare that they have even a United States Pharmacopoeia as a guide and their preparatlns may range anywhere in strength from 40 to 200% of the U. S. P. requirements.

"This class of druggists bring discredit upon the entire profession. Speaking of this class of drug stores, located in towns where there is a demand for intoxicating beverages, Dr. Beal further says:

"A common occurrence in such towns is the establishment of new drug stores

Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade. ASK YOUR GROCER FOR THEM.

which are really but saloons in disguise, and frequently owned by ex-saloon keepers. A few rows of shelf bottles half filled with drugs, a show case or two filled with cigars or toilet articles, the usual globes of colored liquids in the show window, and the trick is done.

. . . . . .

"It is fairly certain that if we do not undertake this housecleaning for ourselves, it will be taken up by others. The day of the whiskey selling druggist is destined to be short in the land. If more legislation is needed, it will be forthcoming."

It is not our purpose to discuss the question of the use of alcoholic beverages, but rather to point out one of the reasons why there is found such variation in pharamaceutical preparations. This clearly indicates the necessity for the strict enforcement of the Drug Law and the need for holding the requirements for registration to a high educational standard. This would also aid in solving the drug clerk problem in the state, and check the unnecessary increase of drug stores of questionable standing.—Report, N. D. Food Department for 1907.

DIRT, DANGER, DISEASE

The National Consumer's League have prepared some sanitary maxims for educating and enlightning the consuming public and we reproduce the following:

"Clean water, clean food, clean streets, clean houses, keep us healthy.''

AT THE STORE

Buy food at the cleanest stores only. But only clean, fresh food.

Refuse to take food handled by dirty hands. Insist upon its being well wrapped. Paper bags are best.

Buy only the purest candies. Is the candy pure and clean that your children buy from the push cart? Do not buy decayed food because it is cheap.

Do not buy bread and cake at dirty bakeries. Look into the baking rooms, if possible. Are they clean?

Examine the packages of cereals for worms before cooking. Packages of long standing often become infested with worms and are sometimes found at the best stores.

Does your grocer keep his butter and milk in clean, cold places, and are they covered? Does he keep his candies, figs, dates, berries, lettuce, bread, etc., exposed to flies and dust from the street in shop or show window? Flies carry dirt and disease to food and man.

Are your grocer and butcher and baker cleanly in person? Are their *clerks cleanly?*

Urge them to keep their goods off the sidewalk. There is danger of disease in street dirt. Ask the delicatessen storekeeper and the pushcart man to keep their eatables covered.

Refuse to buy food sold in open buckets which stand uncovered in the store day after day.

LABELS.

The law requires all food manufacturers to label their products truthfully.

Do Read the Labels Carefully

They are your protection from fraud. Study them and learn what is an honest label.

The labels must tell what is inside the can or box or bottle. If it is a compound it must be so stated.

Read the small print, as it often more important than the large.

Does the label tell the truth about the weight of the package? Don't buy foods artificially colored. Don't buy foods containing chemical preservatives.

MEDICAL MILK COMMISSIONS AND CERTIFIED MILK

"Medical Milk Commissions and the Production of Certified Milk in the United States" is the title of a publication of interest alike to dairymen, milk consumers, and sanitarians, which has just been issued by the United States Department of Agriculture. It is designated as Bulletin 104 of the Bureau of Animal Industry, and the author is Clarence B. Lane, assistant chief of the Dairy Division.

There are about twenty-five such commissions in this country, and under their auspices important steps have been taken for supplying clean, wholesome milk for infants and invalids and toward raising the standard of the general milk supply. Each commission enters into an agreement with one or more dairymen whereby milk produced in conformity with certain requirements receives the indorsement of the commission and is entitled to be sold as certified milk—the word "certified" having been registered in the United States Patent Office. A veterinarian examines the cows to see that they are in perfect health. Samples of the milk are tested by a chemist and must be free from foreign matter and contain a certain percentage of butterfat. A bacteriologist examines samples for any trace of disease-producing bacteria and for the presence of excessive numbers of bacteria of any sort. Representatives of the commission make personal inspections of the dairy to insure that the milk is handled under strictly sanitary conditions. Only in case all these reports are satisfactory does the commission certify to the milk.

The principal difference between certified milk and ordinary market milk is that the former is the cleaner milk. For its production the barnyard must be kept free from manure and well drained, the stable must be well ventilated and drained, with walls and floors easily cleaned and free from dust, and the water supply must be plentiful and of good quality. The cows are frequently groomed, and the milkers must be healthy and dressed in clean suits. The milk must be drawn by clean hands into clean vessels, cooled quickly in an atmosphere free from bad odors, sealed in sterile containers, iced in transportation if necessary, and delivered promptly. As would naturally

be expected, certified milk with its small number of bacteria will keep sweet for a long time. Instances are on record where it has been taken on ocean voyages and has kept sweet for thirty days or more.

The demand for certified milk is increasing, and properly equipped dairies have little difficulty in producing milk that meets the requirements. The inducement offered the dairyman is the increased price, which varies with the locality from 8 to 20 cents a quart to the consumer, the price of market milk varying from 5 to 10 cents. In some cases the business has not paid owing to the great cost of the buildings and equipment, but according to this bulletin much of this expense is entirely unnecessary. Sanitary conditions and extreme care are shown to be far more important than fine architecture and complicated apparatus.

In 1907 twenty-one commissions held a conference at Atlantic City in connection with the American Medical Association, and later there was organized the American Association of Medical Milk Commissions, which will hold its second annual meeting June 1, 1908, at Chicago.

Shade Trees and Gardens.

C. B. Waldron, N. D. A. C., Editor.

Two fruit tree diseases that attracted a good deal of attention last season and elicited considerable inquiry are the apple tree blight and the plum pocket of the plum trees. The apple tree blight usually puts in its appearance sometime in the month of June. Its presence is manifest by the brown leaves which appear upon certain twigs of the tree. The bark of these twigs also shrivels and darkens. The diseased bark gradually extends downward toward the base of the tree until the entire tree may become diseased. More frequently, however, it is confined to a single branch here and there. These branches have the appearance of having been scorched by fire, shriveling the bark and turning the leaves brown. This gives the disease the name of "fire blight" by which it is frequently known. The disease is caused by bacteria which are in most all cases introduced into the tree thru the blossoms by agencies of the honey bee? The bee visits the diseased tree where it accumulates a number of the disease germs. These are carried to the healthy tree by the bee and the germs are released. They multiply rapidly in the nectar of the blossoms and some gain entrance to the twigs where they multiply rapidly in the sap of the young cells. Owing to the manner in which the disease is introduced, it is very difficult to prevent its occurrence. Any spray to be affective would need to be applied at the instant the flowers open which would be a practical impossibility as the flowers appear at different times for a period of several days.

The only practical remedy is to cut off and destroy the diseased branches as soon as they appear. Fortunately some varieties of apples are not very subject to this disease Among these are the Hibernal, Wealthy, Patten's Greening and Lyman's Prolific. While all of these may blight a little in some seasons and upon some soils, still they resist the disease fairly well and with little attention are not apt to receive serious injury.

A number of attempts have been made to combat the disease by introducing chemicals of different kinds into the tree. This can readily be done by inserting a rubber tube tightly in the trunk of the tree, the rubber tube being connected with a bottle of some chemical solution. This remedy has been thoroly tried with different solutions for a great number of years in the old world, particularly in Germany and in England. A number of years ago these countries were flooded with advertisements of various compounds to be applied in this manner for the sake of killing the blight and other diseases. It was found upon trial that none of there compounds were of any value in checking the diseases. Reputable papers, like The Gardner's Chronicle long since condemned all of these, and denounced as "fakers" those who were exploiting this remedy. Owing probably to the discouraging results in the Old World but very little work of this kind has been attempted in the United States. So far as we know all efforts in this direction have been wholly without results.

There is considerable question in the minds of tree growers whether trees growing in certain kinds of soil are especially liable to attack from blight. While recognizing that blight is due to specific organisms, yet it might be possible that trees that were made to grow too rapidly by being planted in rich soil, might be more subject to the disease than those having a normal growth. There are some horticulturalists who hold this view and, as a result, do not plant their trees in the richest locations. It is also their custom to plant the trees much deeper than where they grew in the nursery for the sake of checking their growth with the idea of diminishing their liability to diseases. Experiments along this line have not been sufficient in number to furnish any very definite results.

The pocket disease or bladder disease of the plums is also due to micro-organisms but to a fungus instead of bacterium. This fungus makes its entrance into the plum trees by means of spores which lodge upon the new twigs and leaves in the spring or the year. These spores come from the plum pockets and diseased tissues of the previous year's growth. After the fungus once establishes itself in the tree it remains permanently and cannot be eradicated except by cutting off the diseased branches. As there is nothing on the exterior of the branches to show the presence of this disease, it is a rather difficult and uncertain process. The presence of the disease is indicated only by the peculiar puffed-up and hollow condition of the fruit. By picking off and destroying this diseased fruit one prevents the formation of spores and the liklihood of the disease spreading to the other trees, but it has no affect on the tree bearing the diseased fruit. It is found that plum trees growing in a thicket where there is not a free circulation of air are more subject to this disease. It is because the moisture remains on the trees so long that the spores have an excellent chance to germinate. Trees planted a good distance apart, say, 12 ft. x 16 ft. and not too closely confined by other trees are not very liable to be affected. In this disease as in the apple blight certain varieties are more nearly

immune. The DeSota, Surprise and Wyant, if grown in good locations, rarely suffer from this disease. If one has a wild plum thicket in which the disease has become well established it is better to cut it down. He is not likely ever to obtain much fruit from the thicket and it is a source of danger to his other plum trees.

From all parts of the state complaints have been coming in of injury to the cottonwood trees. This injury shows itself has a peculiar, irregular sac-like growth at the end of the new twigs. This growth is at first green and later in the season becomes black, in which form it remains upon the trees all winter. On cutting it open during the summer, it will be found to contain a large number of plant lice which live inside and get their living by sucking the juice of the tissues. Since these are enclosed in this sac there is no way to reach them with any of the ordinary insect remedies. If one has the patience to cut them off and burn them he will get the best of the insect. Otherwise he must plant something besides the cotton wood. This insect seems to be multiplying rapidly and until same natural enemy overtakes it, it will undoubtedly be very much in evidence.

It will soon be in order to keep on the lookout for the white butterflies that are at this time of the year due to lay their eggs upon the cabbage. The first brood of butterflies is not very numerous and the first lot of cabbage worms often escapes its just desserts because they do not do sufficient damage to attract attention. If all who grow cabbage would, however, see to destorying the first brood of worms we could thereby largely reduce in numbers the second brood of butterflies. This in turn would greatly reduce the second brood of worms which is so destructive to our cabbages during the late summer and fall. The first brood of worms is easily destroyed as the cabbages are not commenced to head at that time. A little kerosene emulsion made in the proportion of one part of kerosene to sixteen parts of strong soap suds will destroy the worms if it is sprayed upon them While the plants are small the spraying can be done with a small hand syringe We have also found that water heated to 170 degrees will kill the worms and not injure the cabbage. After the cabbages have commenced to head these remedies are not so easily applied. It is then a good plan to mix hellibore and pyrethrum in equal parts, mixing these with about six parts of flour. This may be dusted upon the cabbages early in the morning when the dew is on. This remedy applied from five to six days for a month or so is found to keep the cabbage free from insects.

Many people are expressing surprise that so many of their trees and shrubs died during the past winter, which was the mildest one of which we have any record. They figure that trees which had hitherto endured a temperature of 40 degrees below zero should not have been put out of commission by the mild imitation of winter of 1907-08. It is a matter of fact that the plants were not killed by the cold but by the heat. It will be remembered that there were a large number of days during the winter in which the temperature ranged between 50 and 60 degrees. At these high temperatures the trees lose their moisture rapidly. There are tiny openings thru the bark of the young twigs thru which the water of the plant makes its escape by a process known as transpiration. There is practically no transpiration in them during cold weather but it is active as soon as the temperature rises above 45 degrees. If the roots of the plants are frozen as they were in January and February, they can, of course, furnish no moisture to the plants. The result is that the plants become thoroly dried out, so much so that they are unable to resume growth in spring. This is particularly true of thin barked trees like the willow and of coniferous trees like spruce and pine, that hold their foliage during the winter. The older trees growing in groves with roots extending below the frost were, of course, uninjured. But new trees and shrubs in exposed places, particularly trees growing on south slopes, were killed by the thousands. Our only consolation as tree growers is that such mild winters are not likely to occur very often. We will have to join hands with the coal man and demand that our old fashioned winters be returned to us.

The Horticultural Society will hold a summer meeting on the Chautauqua grounds at Devils Lake, in connection with the Farmers' Institute July 8-9. Horticultural meetings will also be held at Lake Metigoshe July 1 and at Fish Lake, July 3. Special speaker will be secured for these meetings. Lake Metigoshe and Fish Lake are summer resorts in the Turtle mountains.

RUSSIAN OLIVE

Can you tell me where I can get the seed for the Russian Olive and what species is best adapted for this climate?

I am setting out about twelve acres of trees, am trying the Norway Poplar both cuttings and trees, also Golden and Laurel Leaf Willows from Cuttings, some cotton-wood seedlings, also ash and boxelder. Have in 1000 two-year-old currants, 500 raspberries, 100 Pearl gooseberries two years old. But would like to try the Russian olive.

Is there a Horticultural Society of North Dakota and is there a North Dakota Farmer published. We take the Dakota Farmer.

Hoping to hear from you at once, I remain, O. R. Brown.
Minot, N. D.

Answered by Prof. C. B. Waldron

Your letter to Prof. Ladd concerning trees has been referred to me for reply. As he is editor of a North Dakota farm paper, he will probably not have much difficulty in directing you in this matter.

I enclose a leaflet issued by the North Dakota Horticultural Society. By sending $1.00 to O. O. Churchill, Sec'y, you will become a member for a year. This membership entitles you to the publications of the Minnesota Horticultural Society.

I would not recommend the Russian olive for ordinary timber planting. It is of no particular use except for wind break purposes and I think the timber is of no particular value. In obtaining the Russian olive you should use care in selecting that which comes from northern Russia; as the southern type is not hardy here. The better name for this Russian olive is Olcaster.

The Norway poplar is very closely related to the cotton-wood, in fact, is but a different type of the same species. It seems to be the impression in certain places that it is better suited for general culture than the cottonwood but this has not yet been fully determined. It unquestionably makes a very symetrical tree and a better shade tree.

You will not accomplish much with the laurel leafed willow. Three or four single specimens on a lawn are all right but it goes to pieces rapidly in general plantations.

The box elder is suited only for a nurse tree to plant between thin foliage trees, like the ash, so as to keep the ground shaded. After five or six years or perhaps sooner it should be removed from the plantation as it has but little

timber value and makes a poor growth after fifteen years.

Many who inquire about the Russian olive imagine that the fruit has some value. Perhaps you are familiar with the fact that it is not an olive at all and the fruit is useless except for producing new trees. You will doubtless succeed very well with your currants and gooseberries if you keep the hills pruned to not more than eight canes.

The ideal gooseberry or currant has two one year old canes; two, two-year old; two, three-year old and two four-year old canes. Each year two new ones are allowed to grow and the old ones are removed.

Raspberry culture is more of an uncertainty. I shall be very glad to hear later on what your experience is.

BRITISH COLUMBIA FORESEEING FOREST SERVICE

At one stroke of the Lieutenant Governor's pen, 150,000,000 acres of forest land in British Columbia have been placed in reserves. This includes every acre of the province's timberlands, except what has been leased. This is as much land as was put in the National Forests of this country between the years 1891 and 1907.

The action was taken to check wasteful exploitation of timber resources and to bring the care and cutting of timber more effectually under government control.

The province has been leasing timberland instead of selling it. The most of the leasing has been done the past three or four years, and Americans hold the largest part of the 10,000 leases now in force. The lease is, in its effect, a long-term option at low rate. It runs twenty-one years and may be renewed at the end of the first term. The lessee pays twenty-five cents a year until he is ready to cut the timber, when he pays a royalty of fifty cents per 1,000 feet, board measure, for the timber removed. The income of the Province from leases was about $1,275,000 last year.

British Columbia is the latest of the great soft wood timber regions to be invaded by lumbermen. The great industry began its work in Maine two or three generations ago; passed later to the pine and hemlock forests of Pennsylvania and New York, and when supply ran short there, they moved to Michigan, Wisconsin, and Minnesota. The pine woods of the Lake States held out a long time, but the decline finally became so rapid that the scene of operations was shifted to Washington and Oregon. The output of the Puget Sound region rose to first place, and it is still at top notich. But holdings are harder to get, and buyers and speculators have crossed into British Columbia. While there are many rich stands of timber in the Province, it is doubtful if the forest woods furnish a cut of more than 100 to 150 billion feet of lumber less than what this country uses in eighteen months.

British Columbia does not permit the export of logs cut on provincial land. They must be sawed by mills in the Province, which evidently intends not only to take care of its timber, but to make the most out of it. An export duty has been seriously considered by the Dominion Government for all the proivnces of Canada. It is apparent that British Columbia will not be slow to take any advantage which the further diminishing of the timber supply of the United States may afford her in the lumber trade.

AMERICAN SOCIETY OF EQUITY.

CHAS. U. PIERSON, Casselton, N. D.

Rockland, Ky., March 31, 1908.

Local Union No. 2463.

To Equity Farm Journal·

We are having a great revival of A. S. of E. religion in Warren County, Ky. They need no preacher to persuade them. All they need is an invitation and they are ready and willing to give up their sinful ways and quit following the trust. They are realizing when Abraham Lincoln signed the Proclamation that all citizens of the U. S. shall be free and not to be enslaved, by the Tobacco Trust and other combinations any longer, and feeling that we are returning back to our old emblem of the U. S. a land of liberty and freedom.

Last year we reaped our first harvest of the A. S. of E. by selling our tobacco at 8 cents per lb. Prior to this our county had been slow in organizing and we only had five Locals, and now we have 22 Locals at last report, but do not vouch for this report, as we are organizing so rapidly. The scales are falling from the eyes of many who so bitterly opposed us in the beginning, and they now join hands with us and clearly see their way. And we do bitterly oppose all lawlessness and acts that are done by so called Night Riders, and we are grieved to think that the outside public are so eager to accuse them of being members of the A. S. of E. We most sincerely appeal to all loving citizens to aid in bringing the guilty to justice.

Furthermore we regret to see our Ex-President Everitt forsake our much loved Union; the Union which he was the founder of, but we are glad that the A. S. of E. maintains honesty and integrity above all members, and feeling that the actions toward Mr. Evereitt should be ratified with gladness by all of the A. S. of E. members in breaking up Everitt's paper monopoly. With a forgiving spirit will be granted unto him by his confessions of wrongs, and by so doing we would gladly receive him again as a brother.

At our last meeting we decided to have a barbicue at Clifty Bridge on the 4th of July, and we earnestly request of President C. M. Barnett and all other officers to be with us on that day.

T. R. Him, Pres.
A. J. Stahl, Secy.
J. Hardy Thomas
N. L. Pemberton, Com.

Boys Interested in Corn Culture Contests Should Read Personal on Page 26.

Home Affairs

Katherine C. Neilson, Editor

Now is the time to commence filling the fruit cans. Look after the nice tender pie-plant—it is of more value as a base for marmalades than once considered and so cheap all can have it.

When ready to stew for sauce, add sugar and a few raisins but no water. Cook slowly.

It makes fine pies, stewed; when done, beat in an egg—fill a previously baked crust. Whip the whites of eggs for frosting and brown.

Nut Marmalade

4 lbs. Rhubard.
5 lbs. Sugar.
1 lb. Almonds, chopped.
4. Lemons—unpealed.

Do not peal the rhubarb. Slice the lemons, add 1 cup of water and boil one and one-quarter hours, slowly. Put in jelly glasses and cover with paraffin.

This is good with simply raisins and rhubarb or sliced unpealed orange.

Currants make a fine summer drink.

Prepare as for jelly—with the same proportions of sugar.

Scald and skim, then seal. Use one-third of a glass of juice to two-thirds cold water. This same juice can be boiled anytime and made into currant jelly. Half currants and half red raspberries make it better and of finer flavor.

Sponge Pudding

½ cup of flour
1 pt. of milk
¼ cup of sugar
¼ cup of butter.
Separate yolks and whites.

Save out enough of the milk to wet the flour smoothly. Put the rest of the milk into the double boiler and heat it hot. Add the sugar and butter. Then stir in the smoothed flour and stir until cooked. Then add the yolks well beaten and stir the mixture until cooked thick. Let it cool. Then stir in the beaten whites; pour into a buttered dish and cook in a pan of hot water in the oven until it is like sponge.

Foam Sauce for Sponge Pudding

1 cup of boiling milk in a double boiler.

1 cup of sugar.

2 egg whites beaten to a foam but not dry.

Add the sugar; beat well. Then the hot milk and flavoring. And beat briskly in the bolier.

TESTING WELLS FOR SAFETY

I saw in a recent issue of the N. D. F. an article on the subject of gas in wells, which urged well-diggers and others to test the well by lowering a lighted lantern into it before going down into it. Now the lantern test has been used for many years and is probably the only test used for gas, at least it is the only one I have ever heard of being used; but for all that it is not infallible. Not long ago a man near Portal tested a well with a lantern and the lantern continuing to burn he went down, was overcome by gas and was taken out dead.

Now I have given this subject much thought and I have come to this conclusion: If some small animal as a gopher, cat, or even a mouse, were lowered in a box or cage and left for a few minutes at the bottom of the well this would be a much more reliable test than the lantern, as these animals, breathing air the same as a man, would be overcome by gas the same as a man; possibly a little more gas or a longer time would be required, possibly less, but if it were left say ten minutes or even five and suffered no ill effects the well may be considered, certainly safe. A cage made of wire cloth the same as is used for windows and screen doors would probably be most convenient as well as cheap. In case none of the animals mentioned were to be conveniently obtained, a chicken might be substituted, the point being to use some air-breathing creature which would be affected by gas the same as a man.

Plumer. O. L. Willson.

DON'T WABBLE

There is one sort of man that there is no place for in the universe, and that is the wabbler—the man on the fence, who never knows where he stands, who is always slipping about, dreaming, apologizing, never daring to take a firm stand on anything. Everybody despises him. He is a weakling. Better a thousand times have the reputation of being eccentric, peculiar and cranky even, than never to stand for anything.—Success Magazine.

SECRETARY WILSON'S ADVICE TO BOYS

In a recent address before a meeting of the Normal Teachers' Association at Washington, Secretary Wilson of the Department of Agriculture, made some highly sensible remarks in a plea for agricultural education. In the course of his address he said that today the boy is leaving the farm and going into the crowded walks of city life where there is much competition. He said that because of this influx of the country boys to the city the farm is being deserted, and consequently prices on foodstuffs are going up. He said the desertions have become a national menace.

"The time is fast coming," he said, "when the common people won't be able to eat meat and poor people cannot even have pie plant. Why is this? Because we have not instructed our boys in scientific methods of agriculture by which they may make a success on the farm. As a result they are leaving for the factory and the railway shop where they can make more money, and, as a result, agriculture the most important occupation in the world, is being neglected."

Secretary Wilson then made a plea for industrial education, and declared that the state normal schools, especially

of the southern states, should take up the work with greater zeal in the effort to restore the American farm to its proper position in the minds of the coming generation.

"I am a country fellow," continued the Secretary, "pure and simple. I never went to town in my life except to do sometihng. For eleven years I have been here in this beautiful city working for the American farmer. We have philanthropists in this country, but did you ever hear of a philanthropist giving money to educate somebody along agricultural lines? But in fairness to them I want to say that recently some in New York have been doing something for the work in the southland."

THE USE OF SNUFF

The following taken from a letter by a respondent is a type of information that has come frequently to the editor during the past year.

"Merchants here have all told me in conversation that some years ago a jar of snuff would last a good long while and that now they can scarcely keep enough on hand to supply the demand. Their sales in this line are abnormal. This fact coupled with the statement of some of the users themselves—mostly young men or beginners—that they have such a craving for snuff that they cannot leave it alone, has lead me to write you to inquire what ingredients the article contains to create such a demand and such a craving, and, if it is injurious, why the Pure Food Law has not placed a ban upon it. I know of one young man who quit drinking and quit chewing, but told me with tears in his eyes that he could not break off from snuff—that he just had to have it. He said he had gradually come to use more and more of it, beginning with one box, and now required three or four a day. He said it was a habit that grew on one, and that it contained something to create a craving. Copenhagen snuff is the stuff they use here, and they use it just like tobacco—chew it in the mouth as a sort of cheap substitute."

Answer

We can give no information on this matter and should be glad to know the experience of others. Why is it that the use of Snuff has during the past few years been so on the increase in this state? Readers, what has been your observation and what do you think of the situation? E. F, LADD.

Every hour in a man's life has its own special work possible for it, and for no other hour within the allotted span of years, and once gone it will not return.—Noel Paton.

ONE EXCEPTION

We praise her doughnuts and her pies,
Her biscuits and her cake;
But where's the man who sighs for pants
Like mother used to make?

She used to take a pair of pa's,
When they were worn and frayed,
And decorate them with a patch
Of some contrasting shade.

And cut them off about the knees,
And take the waist in, too,
And say that they for everyday
Were just the thing for you.

And then she sent you off to school,
And when you didn't go,
She wondered what got into boys
That they played truant so.

Yes, still we praise her jam, her "jell,"
Her coffee and her steak,
But where's the man who sighs for pants
Like mother used to make?
—Kansas City Times.

KEEP A GOING

There is nothing you should want
But you can get it, if you try,
If you only keep-a-going.

Of the many in the race
So few keep up the pace.
All the prizes go to those
Who keep-a-going.

It is hard when you are striving
To seem under fortune's frown
Hard, when trying to press forward
To stumble and fall down.

But the only thing to do is
Keep-a-going—keep-a-trying.
Don't like cowards get to think
Of lying down and dying.
—M. T. Sheahan.

We rise by the things that are under our feet;
By what we have mastered of good or gain;
By the pride deposed and the passion slain,
And the vanquished ills that we hourly meet. —James Russel Lowell.

The only way to have a friend is to be a friend.—Emerson.

'Twixt optimist and pessimist
The difference is droll—
The optimist sees the doughnut,
The pessimist the hole.—Judge, N. Y.

And each one gets just what he sees,
Doughnut or hole; sunshine or gloom,
The one grows fat, the other lean,
One reaches 'Peace, the other doom.
—Eli.

AMONG OUR ADVERTISERS.

THE TELEPHONE AS AN ECONOMY

A few years ago it was the policy of the telephone companies to go to considerable expense in order to demonstrate to the business man the value of the telephone. Today this is no longer necessary as there is not a business house of any consequence in the country that doesn't have telephone service. Most of the department stores in the cities now have a telephone on every counter, and every clerk in the office has a telephone at his elbow.

A telephone is not an expense. It is a means of reducing expenses. There was a time before the telephone industry was so thoroly developed when the cost of manufacturing the instruments was high and when telephone service was an item of consideralbe expense. Now that the costs have been so greatly reupced, the very best telephone on the market, the same as those used by the Long Distance Companies, may be purchased for ten or twelve dollars. These instruments will give service for years with no attention other than possibly a battery renewal at a cost of thirty or forty cents every six or eight months. Two telephones with sufficient wire to connect the one with the other is all that is needed to start a telephone system. There is no comparison between the low cost of a telephone service and the remarkable saving of time and money which it accomplishes.

Every farm without a telephone is every day unconsciously piling up expenses for services which the telephone would take care of in a few minutes, to say nothing of the hundred and one additional services it would perform which are now entirely unprovided for. It is economy which no household should be without.

Eastgate Bros., of Larimore, N. D., have a change of ad this month. The Willobank Farm is furnishing some pretty fine stock and their past record for square dealing will attract many buyers the present season.

Our faithful friends, the farm workhorses, would certainly be interested in the exhibits of the Davenport Wagon at the fairs this season, for such an easy-running wagon means lighter draft for the animals and increased profit for their owners.

Are you anticipating a scarcity of help the coming season? If so, it will pay you to investigate the merits of the Nelson Dump Rack. Our artist "caught it in the act" and to the practical observer there seems to be great economy in the device.

A very valuable book, "Some Interesting Facts on a Homely Subject," has been prepared by Mr. Louden, which ought to be of interest to every farmer. Our readers can obtain a copy of this book by addressing Mr. Wm. Louden, Fairfield, Iowa, whose interesting article on Agricultural Colleges will be found on this page.

The fact that M. V. Facey, who has patronized the advertising pages of the North Dakota Farmer for several years, is editor of the Apiary Department of the St. Paul Farmer and superintendent of the Honey and Bee Department of the Minneasota State Fair, is sufficient guarantee that all orders for honey sent him will be filled to the entire satisfaction of the purchaser.

AGRICULTURAL COLLEGES AS SEEN BY WM. LOUDEN

Wm. Louden, Fairfield, Iowa

William Louden, of Fairfield, Iowa, was selected by Governor Cummins of that State as one of the three men to represent the State of Iowa in the conference called by President Roosevelt, to discuss the conservation of the national resources of the country. Mr. Louden was formerly a farmer, but is now the head of the Louden Machinery Company, of Fairfield, Iowa. He is one of the members of the committee of three of the Iowa Manufacturers' Association on Industrial Education. He has given this subject extensive study—an author of considerable note, intensely interested in the matters which were the chief consideration of the conference at Washington.

In an address delivered at the Iowa manufacturers meeting at Council Bluffs, Mr. Louden said:

"It is a well recorgnized fact that a special education is essential in every branch of human endaevor. If a young man wishes to be a lawyer, he should go to law school; if a dcotor, to a medical college; if a preacher, to a theological seminary, and so on. A rudimentary education is necessary for all and has been provided for by our public school system. After that, whatever additional branches may be taken up by the few who have the time and the money to spare, there should be provided for the many a practical education, which will properly fit them for the active duties of life. In this government the majority is supposed to rule, hence the importance of educating the masses. It is not possible, however, for everyone to learn everything. Life is too short, and the average capacity and endurance is not sufficient for that. Therefore, a selection in the after studies to be pursued has to be made.

"There is probably not more than one-tenth of the people engaged in what is known as the 'Learned Professions,' but to make a conservative estimate and including persons of leisure, I will call it one-fourth. This leaves three-fourths of the entire population engaged in the business of agriculture, mechanic arts, housekeeping and kindred occupations. If those engaged in these occupations are to have as good an education in their respective lines as those engaged in the professions, you can readily see what will be required.

"Fifty years ago probably no one had ever heard of tuberculosis in cattle, but now it is one of the burning questions. Since the passage of the pure food law and the rigid government inspection of meats, the packers have been losing many thousands of dollars by the rejection of carcasses which are affected with tuberculosis. In addition to tuberculosis in beef, there is to be considered also the question of tuberculosis in milk, buttter and cheese, which makes it one of the far-reaching questions of the day.

"These are only a few of the problems which confront the modern farmer and there are more to come. How is he going to meet and solve these problems? A reliable understanding of the conditions involved and a practical knowledge of how to overcome the difficulties encountered will alone avail. Nature's laws are irrevocable and are never set aside by any one. 'Know How' is the only password, and no one can enter without it.

"One of the most distressing signs of the times is the spirit of pessimism and distrust, too prevalent among farmers and laboring men. Some of them seem to think that everyone's hand is raised

against them, and that all have conspired to beat them. This is a sure sign of a lack of education. Nothing can be done in this spirit, for one optimist will accomplish more than ten pessimists and will rule them every time. We should look at the dark side of the question for one purpose only, and that is to devise means to better it. It is necessary to look at it for this purpose, and this alone, When the great agricultural manufacturing and housekeeping masses get together in earnest, and with an intelligent purpose to improve their condition, they will receive the hearty co-operation and assistance of the learned professions, because what is good for one is good for all.

"Agricultural colleges are a rather recent innovation. Fifty years ago the first one in this country was established at Lansing, Michigan, and one week ago its semi-centennial was celebrated in that city, and was considered an event worthy of the presence of President Roosevelt, who made an address which should be read and studied by all. A friend of mine recently said. 'Of all the money the State spends, there is none which begins to yield the returns of that spent for its agricultural college.'

"It is impossible to estimate the work that has been done by colleges—the light that has been shed by them on the important matters in charge. We only know that it has been great, but great as it has been it is but little more than a drop in the bucket to what is needed.

"I have also heard it said that agricultural colleges are too expensive in their operation to be of benefit to the ordinary farmer. If this is so, it is simply a matter of administration, which can easily be corrected in the proper way. It cannot affect the principles at stake."

FROM THE NATION'S CAPITOL

By GUY E. MITCHELL

HOW MANY ARE YOU RESPONSIBLE FOR?

Dr. L. O. Howard, Entomologist of the Department of Agriculture is authority for the statement that in a single summer two flies can breed 74,472,197,608,800,000,000,000 of their kind.

At Washington," says the Doctor, "I have found in midsummer that each female lays about 120 eggs, which will hatch in eight hours, the larva period lasting five days and the pupa five days, making the total time for the development of the generation ten days. There is thus abundance of time for the development of twelve or thirteen generations in the climate of Washington every summer." The above figures which Doctor Howard quotes is for twelve generations. Fingers and mind alike grow tired short of the thirteenth.

I single fly, just one of this plague, can rob a man of all his peace of mind. A dozen can put a household in torment. But this is not the chief objection to the fly as an institution. That lies in his limitless ability to disseminate disease. He carries it via the most direct route—directly to our stomachs—by contaminating our food. The fly is very dangerous to the health of human beings, carrying as it does the germs of intestinal disease such as typhoid fever and cholera. If any one of us saw this amazing horde of insects buzzing about our windows and could put them out of existence with a single stroke we would do it—quick as lightning. Yet when we permit a single pair to breed, we invite these seventy-four sextillions to come into existence. That is the premium put upon a close watch against the propagation of our ordinary house or table flies.

A careful screening of windows and doors during the summer months, with the supplementary use of sticky fly papers, is suggested as a preventive measure known to every one. But a better means is to stop the breeding of flies as far as possible. To that end the breeding places of flies—the manure piles of stables—should be watertight, and constructed so as to prevent the ingress and egress of flies.

Maybe there is some kind of a spot in your charge which breeds flies! Doctor Howard states "A single stable in which a horse is kept will supple house flies for an extended neighborhood." Will you do your part? Or will you look on indifferent to the discomfort and disease that thru your neglect may be spread by flies to the number of 74,472,197,068,800,000,000,000 for every pair you permit to breed this spring?

PLANTS OLD—YET NEW

One of the oldest practical scientists, in point of service in the Department of Agriculture is Frederick V. Coville, the genial and efficient chief botanist. Fully ten years ago Mr. Coville talked to me on the economic importance of various branches of the Department's work and I recall that he spoke particularly of the importance and need of plant introduction and distribution, stating, by way of illustration that as much if not more would be added to the producing wealth of the country thru the introduction of new crops from abroad as would result from the reclamation thru irrigation, a national policy at that time just beginning to be a popular measure, of a possible seventy-five million acres of desert. "The Department has experts all over the world," he stated in effect, "searching out plants which may be of benefit to America. For every acre in the United States, north, south, east and west, of high altitude or below sea-level, there is a counterpart in soil and climate in the Old World; and that Old World is full of agricultural experience. It has been, with Old World plants, a survirval of the fittest, and we can greatly profit by that experience. Department men are finding valuable products from time to time and when something of probable use is discovered the Department makes it its business to see to its distribution."

Since this statement of Mr. Coville's, the Department has consistently and persistently carried forward this plan and the results have been far more than commensurate with the efforts. A section of plant distribution has been organized as a medium thru which to disseminate the valuable cereals, root crops, fruits, etc., which the men of the Department find in cultivation in the old countries and to follow their progress and make a record of their success or failure in the United States. No other country in the world has such an effective organization for this purpose. It is of importance that new plants should be given thoro tests and a record kept of their performances in their adopted homes in various portions of the United States, more important in fact than their discovery and introduction, because unless such a full test is made and a record kept, the entire work may be done over again in a few years by some one else.

Livestock Department

PROF. W. B. RICHARDS, Editor

REPORT OF THE NORTH DAKOTA BREEDERS' SHORT-HORN SALE

The Short-horn Sale held at Fargo, June 3rd under the auspices of the North Dakota Live Stock Association was not very well attended and for that reason the sale was rather draggy, and the prices realized for some of the lots not as encouraging as they should be. The lot that possessed but standing merit brought very creditable prices.

The cattle as a whole were a very good lot with the exception of a few head that were rather low in flesh. In fact most of the consignments at this sale did not show any evidence that they had been given very free access to the meal bin. The high price of grain is no doubt the reason why the breeders have been somewhat reluctant about feeding liberally. This lack of flesh however should have made them worth just as much to the buyers as long as they possessed the requisite merit as to form and breed character.

The management does not understand why more buyers were not present. The advertising had been thoroly done and there was no question, but what the farmers of the state were aware that a Short-horn sale was to take place at this date. The surprise was more evident because the demand has been very brisk for short-horns since the middle of the winter from the reports of all the breeders. In fact most of the consignors to this sale found it difficult to retain the cattle they had consigned to the sale and were obliged to turn buyers away. The North Dakota farmer seems adverse to going a great ways from home to purchase breeding stock. Previous sales have demonstrated this fact and private sales demonstrate it as well. This practice is a mistake, for a few extra dollars spent in search of breeding stock is generally well spent.

The judging pavillion at the State Fair Grounds provided a very convenient place to hold the sale, with the exception of the distance necessary to walk the cattle to and from the place of shipping.

The work of Col. R. N. Barclay and Frank H. Hyland was very meritorious. They got as much for the cattle as it was possible, considering the number of buyers present.

The leading buyers were Sen. Alex. McDonald, Glencoe, N. D.; N. Olsgaard and O. A. Otterson, Kindred; Geo. N. Smith, Amenia, N. D.; Jas. Beattlie, Ayr, N. D.; A. Coppin, Wahpeton, N. D. Stern Bros., Fargo, N. D. and L. L. Vaughn, Amenia, N. D.

Thirty four head soid for an average of $71.32 per head.

WILD HORSES

Wild horses by the thousands are overrunning the government National Forests of Nevada and neighboring states, and the authorities in Washington are besieged with petitions from stockmen and farmers begging them to put a stop to the nuisance. A recent dispatch from Reno conveyed the intelligence that there are fifteen thousand of the untamed beasts upon the Toiyabe, Toqina and Monitor forest reserves in Landor County alone, and that orders have been received by the forest rangers to begin a systematic war of extermination upon them. This dispatch, altho twisted as to facts, does not exaggerate the number of horses now supposed to be roaming at large in the districts mentioned. As a matter of probable truth there are a good many more than fifteen thousand wild horses in Nevada and the neighboring states, and every herd is a pest to the owners of vegetation and domestic stock.

The part of the Reno telegram whi h is not true is that relating to the orders sent from Washington. Neither the forest rangers nor any other employees of the government have been told to destroy the horses, and unless they do receive such orders they will confine their energies to fencing crops from the trespassing animals or rounding them up when they appear and threaten damage to the range. Indeed, if half the stories brought to the capital are true, all the rangers in Uncle Sam's service would have little chance of destroying the big herds that are roaming over the western states.

Within the last few years they have increased to such an extent that in many localities they are classed as "varmints," with wolves, wildcats and grizzlies, and every man's rifle is turned against them. No fence is strong enough to stop these horses, and when they appear in force they have even been known to knock down and kill cows and calves. After each visitation the ranchman is likely to mourn the loss of his domestic horses, and it requires only a few days' association with their new companions for the best broken animals to become as wild as their nomadic comrades.

A study of the wild horse problem brings to light many interesting facts about the animals. The Legislature of Nevada, it seems, passed a law many years ago specifically allowing hunters to shoot wild horses and to sell their hides for what they could get in the open market. The law opened the way to a new and unusual industry, and many men found the killing of wild horses very profitable. Besides, the work was exciting and gave the business the added zest of sport.

As time went on and the business of killing these "outlaws" (as the wild horses were often termed) on the ranges assumed greater and greater proportions, stockmen found that the professional hunters were, in many cases, abusing their rights and were killing branded and shod horses. This put an end to the business, for on complaint of the stockmen the Nevada Legislature promptly repealed the law. It is estimated that 15,000 animals were killed during the time that the law was in force. This figure gave the basis for last week's story.

The report, however, had good basis of fact, for the wild horse question has

grown to be as serious in the last few years as it was when the Nevada Legislature was forced to enact the old law The United States forest service has not given orders for the killing of a single horse because it has no right to do so. The forest officers of the Nevada national forests realize how bad conditions are, and will do anything to assist the stockmen to put down the nuisance.

Any one who finally discovers an effective method to settle this problem will have done a great service for the stockmen of every state west of the Missouri River. As an old and experienced stockman, now in the employ of Uncle Sam, said of this wild horse problem: "Theoretically it seems a very simple matter to handle, but practically it is quite the reverse." On the ranges of many of the national forests the supervisors have been at their wits' ends for several years trying to devise a method to meet the difficulty. Apparently an entirely saitsfactory method can not be found because of the inadequate estray laws now enforced in the different states. Under the circumstances, the following plan has been recommended to meet the conditions in the national forests:

"If the presence of the horses is seriously damaging the national forest range and public sentiment favors such action, the supervisor may, upon petition of a majority of the permittees of a grazing district, allow the horses to be gathered and disposed of according to the state or territorial laws. In such cases the forest service will, upon recommendation from the supervisor, co-operate in the construction of corrals or fences for the purpose of capturing the horses.

"Forest officers may drive unpermitted horses from the national forests at any time, but if the owners of the horses are known and ownership acknowledged the ower should be allowed to adjust the matter by paying the grazing fee. If he refuses to apply for a permit, then a trespass charge should be brought against him and the case conducted according to instructions.

"Unbranded horses may be handled according to the state estray laws, but forest officers can not be allowed to gather such horses for the purpose of using or selling them, nor can they be allowed to collect any remuneration from any person for corralling unclaimed horses. The policy of the forest service will be, therefore, to co-operate with the stock men of thestate or territorial authorities when they take the initiative in disposing of wild horses in the national forests, but the present laws and regulations do not admit of independent action by the forest service.

The wild horse problem is only one of the many which stockmen have to contend with which the government is trying in one way to another to solve on the ranges of the national forests. Predatory animals, such as wolves, coyotes, mountain lions and wild cats, do thousands of dollars' worth of damage to stock each year in all parts of the country. On some ranges forest officers have to contend with restlers, who sometimes succeed in stealing the great part of the stock which the predatory animals do not kill. Poisonous plants are another nuisance which give the stockmen considerable trouble in many parts of the country.

Uncle Sam has always shown a disposition to co-operate with the stockmen in combating these nuisances; in fact, he is doing better than merely meeting the stockmen half way in the work. On many of the national forest ranges for the last year rangers and guards have been assigned to the work of hunting and trapping, with the sole aim of killing off the animals that prey upon stock. The work has met with marked success, and hundreds of wolves and coyotes have succumbed to the bullets animal killed means a decided saving to and the poison of the hunters. Each the sheep industry, for it is estimated that one wolf averages about $1,000 damage each year.

Forest officers are co-operating wiht the stock associations to stop the stealin of livestock and run the rustlers out of the country. The war on poisonous plants has been carried on for more than a year by the forest service, in co-operation with the bureau of plant industry, and, while the investigations have just been begun, it is already seen that their growth can be checked in many states.

If it is possible to check the wild horse nuisance as easily as the other troubles which have bothered the stock interests, both the stockmen and forest officers will find the western ranges rid of another serious drawback which helps to retard progress in the business.

A COW'S EARNINGS

A real, shrewd, live dairy farmer, says Hoard's Dairyman, will make it his business to know what a cow should earn, in order to bring him a fair profit. This he must do by comparision, either in reading or by observation. In no other way can he learn by comparison unless it be by idle hearsay. A real, shrewd, dairy farmer realizes that he must either read or travel extensively to see what other men's herds are doing. It has simply amazed hundreds of men when they once wake up, to see in what a place of darkness they have been living.

THE COST OF BUILDING A CREAMERY

During the past few years there have been built in the United States several thousand creameries, many of which have been successful from the start, while others have failed after a few months' operation, and some were never even started.

An investigation of the creamery business in several States by the United States Department of Agriculture has shown that the cause of many of the failures was due to lack of a sufficient number of cows, which should not be less than 400, and that others failed because of improper organization, in the case of cooperative creameries, and excessive cost of building and equipment. Many creameries have cost about twice their actual worth, and were not of the type suited to the locality in which they were built.

The cost of a building about 28 by 48 feet will vary from $800 to $1,400, dependent upon the locality, the construction, and the cost of material and labor. Such a building usually consists of a main work room, engine and boiler room (including space for refrigerator machine), coal room, refrigerator, storeroom, and office.

Machinery for a hand-separator plant, consisting of 15-horsepower boiler, 10-horsepower engine, combination churn with a cpacity of 600 pounds of butter, and other necessary apparatus, will cost approximately $1,200. Machinery for a whole-milk plant will cost about $1,850. This equipment will handle from 1,000 to 1,200 pounds of butter per day. If a refrigerating machine is included the cost will be from $600 to $1,000 more.

The total cost of a creamery would therefore vary from $2,000 for a simple hand-separator plant without artificial refrigeration, where labor and material are cheap, to $4,250 for a whole-milk plant including artificial refrigeration and a higher cost of labor and material.

The Department of Agriculture is prepared to furnish information for the proper organization of creameries and

cheese factories, and upon request will supply plan of organization, list of machinery, and plan for creamery. Correspondence should be addressed to the Dairy Division, United State Department of Agriculture, Washington, D. C.

RANGE CATTLE PROSPECTS

At this time of the year, as we approach the season when the bulk of the offerings at Chicago and the River markets, in both cattle and sheep, will be coming from the western range country, the subject of conditions there with respect to probable volume of marketing and quality of the offerings becomes a vital one. As usual, the Report endeavors to furnish its readers early and authoritative information along this line. To that end we recently addressed several hundred letters of inquiry to banks thruout the states of North Dakota, South Dakota, Montana and Wyoming, and as no class of men are in closer touch or better informed with regard to conditions in their respective localities than the bankers the irreplies form a basis for a pretty accurate forecast. It is of course quite possible that later developments may change the outlook materially, and we do not herein attempt to do more than to show conditions as they at present exist. Further, this statement of range conditions is merely preliminary, and will be supplemented by later reports from our own men on the ground, and other reliable sources of information.

Montana

Most of our reports from above state are to the effect that cattle wintered in good shape and will come to market in better flesh and condition than a year ago. From some sections there will be more cattle marketed than last year, while other parts report a probable decrease, the latter condition being due to some of the large outfits having cleaned up last year, while the increase is accounted for by the fact that there will be more small owners shipping this season than ever before. Probably nearly as many cattle will come out of Montana as in former years, but there will be more owners represented. One or two correspondents say that the increase from their sections will be 25% over last year, if prices are satisfactory. There will not be much of a movement before September. Range is reported in good condition, and plenty of water. B. F. White, the veteran banker of Dillon, Mont., writes that shipments from that section will be larger and cattle in better flesh than last year. The Commercial State Bank of Miles City estimates a shortage of 25% in shipments, but says that the condition will be 50% better. The First National Bank of Glendive reports fewer sheep to come this season, but about usual number of cattle, and prospects for feed never better. The First National Bank of Havre looks for a larger movement marketward than last year and reports range looking good. From Wibaux the Dawson County Bank reports a probable increase in marketing and better quality than last year.

North Dakota

Reports are nearly all that condition of cattle will be better than last year, some say 15 to 25 per cent better. There has been plenty of rain, so that range and pastures are in excellent condition. Mild winter and little or no loss. Shipments will probably total a little larger than last year. A good many banks report that about the same number will be shipped as last year, while others forecast an increase. From a few points, however, come less favorable reports. For instance, the Mercer County State Bank reports a death loss of approximately 35 per cent last winter, states that shipments will only be about one-half the volume of last year, and that the cattle are not doing as well. The First State Bank of Ashley says that shipments will be smaller but quality of cattle will be better.

South Dakota

Reports from the above state are generally to the effect that cattle wintered well, with very small loss, few sections reporting over 5%, and from that down to nothing. Most localities report that shipments will be about the same, or a little larger than last year, altho one or two forecast a decrease. The First State Bank of Philip says that shipments will be only about one-half as large as last year. Opinion is practically unanimous that the cattle will come to market considerably fatter than last season. The First State Bank of Java says that condition will be 25% better. —Clay, Robinson & Company's Live Stock Report.

CARE OF THE FOAL DURING THE SUMMER

If the foal is to develop into the best horse he is capable of being made he must have proper care during his first summer, especially. The care received until he is a three-year-old is important, but the most severe set back generally takes place during the first summer and winter.

If the dam is worked the colt should be kept in the barn and preferable in a box stall. It is a poor practice to let him follow his dam about the fields to wear himself out. While the dam is at work the colt should be given grain to eat so that he can consume it at his leisure. The grain should consist of one pail oats to one part bran by weight. He should also have access to some good clover hay or alfalfa if this can be supplied, if not timothy or brome grass.

If the evenings are pleasant it is a good practice to turn the mare and colt

out to pasture. This will prove beneficial to both the mare and colt.

If the mares are not worked it does not assure that the colts will be reared any better for the reason that there is a tendency to neglect feeding them any grain if they run with their dams on pasture. They are often turned out in a pasture some distance from the buildings where it is inconvenient to feed them. It is well to feed the dam for at least a month after foaling and longer if the pasture is somewhat scant. The foal will learn to eat with his dam in a short time. When it is not necessary to feed the dam the colt should continue to be fed grain. This can be done in the pasture by providing a corral that is accessible to the colts, but will keep the mares out. Grain should be kept in the boxes in the enclosure at all times.

Poultry Department

By MRS. B. F. WILCOXON.

Don't be deceived by figures about the poultry business; of course figures don't lie, but the chickens don't always live.

Bad luck is nothing more than a penalty for mismanagement. Before you begin to complain, it would be better to investigate.

There is a difference between embarking in the poultry business and making it pay. Most any one with money can engage in the poultry business, but it takes good business ability to make it profitable financially.

A little beginning is no reason why it should not be a large ending. Many of the poultrymen now conducting large ranches were once "back-yard" fanciers. They were content to go slow and increase as the business warranted.

If you have no experience in raising poultry, don't invest all your spare capital in excessively high-priced stock but save a little for reserve. You will need it later. Be satisfied with something not quite so high in price but good nevertheless.

In hot weather many young chicks will be suffocated by overcrowding if not moved into larger quarters; hence it is better to remove the brood coops as soon as the hen weans the chickens, and drive them into roomy sheds with low poles for roosting.

A small flock of fowls well carred for will return a profit, where a larger will be a source of loss and disappointment. Be satisfied with a few fowls until you can afford room for more or until you have mastered the situation so as to intelligently care for a larger flock.

If you would get winter eggs you must breed and feed for winter egg production. This means breeding from fowls that have shown themselves capadle of shelling out eggs when the temperature is down to zero and below, get the chicks out early, keep them growing and house them in eomfortable quarters.

It will not be long until the hatching season will be over, it will be well to look back and endeavor to see if we cannot discover the cause of the large death rate. If mistakes have been made, jot them down in your memory and be sure you have them well fixed in your mind so that you will not forget them by next season. Remember, success is not in never making a mistake, but in not making the same mistake over and over again.

The sooner that farmers recognize the fact that poultry raising should be followed on the same line that dairying is—giving food and care to secure results—the sooner will they begin to reap their share of the profits and become competitors with practical poultry raisers. The idea that "anything is good enough for hogs or chickens" is a mistaken one that has anchored many a farmer on the wrong side of the road of profitable farming, nothing can be obtained without effort and the more practical and intelligent the efforts the greater the success.

When the roosts are high the fowls will crowd together, each endeavoring to get as high as possible, instinct prompting them to do so in order to avoid danger. If they have a long sweep to fly down they are seldom injured but when they are compelled to jump down almost under the roost the result is a bruise which becomes hard and calloused being known as bumble foot. It is not easily cured but frequently applications of crude petroleum is the best remedy, tho sometimes the knife must be used. A fowl that has once had bumble foot is worth but little afterwards as it will become lame again at times. Make the roosts low and all on the same level, which is the surest preventive.

SCALY LEGS IN POULTRY

Chickens are seldom afflicted by the disease, but it is very troublesome with old hens and roosters. Altho it is one of the worrt pests when once established in a flock it is one which yields rapidly to treatment and is easily cured. It is due to a mite which burrows under the skin beginning between the toes, by a gradual elevation of the scales the disease extends up the leg, the scales are detached and the joints become afflicted. Separate the afflicted fowls from the rest. One scally legged bird roosting with a flock will soon spread the disease among them. Wash the legs and toes with castile soap and warm water. It would be better to use a soft brush then annoint with an ointment made with equal parts of melted tar and coal oil. Repeat the treatment daily until the parts are perfectly clean.

MEAT AND BONE FOR POULTRY

Wheat is rich in protein; clover has a fair share of it; oats has some, but corn is

largely a fatmaking food—and altogether, the grains usually served to Mr and Mrs. Chicken and their family of chicklets are sadly deficient in what they most need—protein.

But the worm and the bug and the grub are composed almost exclusively of protein. Do you wonder, then, that fowls go crazy with delight when a nice fat worm comes sqirming into sight, or that they chase a juicy bug or grasshopper clear across the poltry yard? Just suppose you had been kept on a steady diet of hoe-cake, corn-pone and Indian pudding for three months, what would you do to a nice porterhouse steak if you got a chance at it? Well, that's why poultry needs animal food in some shape or other.

Fowls get some protein from the grain they eat, but, under even the best conditions, not as much as they ought to have; not as much as they can use to advantage. Consequently poultry-raisers began a good many years ago to hunt for something that would take the place of the wild meat fowls captured in the chase in the good old summer time.

They didn't feel like buying porterhouse steaks from the beef trust for even their best hens. But they knew that they could not get the best results so long as their flock lacked animal food.

Finally a genius who had the faculty of putting two and two together so as to make four, examined the makeup of fresh, green bone, such as comes from the buther's block, the trimmings, bones of beef, pork or lamb, with adhering meat and gristle, and found that this bone contained in almost the exact proportions the very food elements needed in place of the worms and bugs the hens couldn't find in the winter.

More than that. It was soon demonstrated that the protein and other food elements in green bone were in an exceptionally available form. That is, poultry could utilize it to a better advantage, digest it more easily, and so get more good and quicker resluts from it.

Probably this is partly due to the fact that poultry relish green bone so much. —Green's Fruit Grower.

CARE OF GROWING CHICKS DURING HOT WEATHER

I have been astonished at the want of careful, painstaking attention which is so necessary for success manifest on every hand with poultry keepers. Water dishes empty; coops filthy, yards bare; lack of fresh air and sunshine in the coops and houses; the absence of which will cause great suffering among the fowls during hot weather. The water pail should make the rounds as frequently as the feed pail and in very hot weather the water is more important than the mid-day meal.

By July the chicks should be far enough ahead to distinguish the sexes, if so separate them, placing pullets in one yard or range and cockerels in another. Give them a good dusting with insect powder, and put them in houses or coops that have been thoroly sprayed with a good lice killer. An ideal range upon which to rear young stock would be an orchard or lot covered with small trees with pastures, meadow land or grain adjacent and over which fowls might have free range as the exercise that the chicks get in chasing after bugs, grasshoppers, etc., greatly helps growth and development and as long as fowls are busy working for their living they will do well. Milk in any form may be given them. Green food will be obtained in its best orm if the chicks have free range, and if not lawn clippings can be given them.

Water vessels must be placed in shady places. They should be scalded and disinfected once a week.

Of course we cannot all have such an ideal range, but we must provide shade by some means make canvas shelters or boards leaned against coops. Anything where they can get a cooling off place. Grit should be provided. Charcoal always have within reach. If you have yard chicks change location every week or spade up the yard. Watch the birds closely and as soon as they show any disqualification the yshould be culled no matter if it is the biggest in the bunch. This requires nerve, but it is the only way to succeed and bring to the highest point of perfection your flock.

To insure best results with chickens keep them busy, free from lice and comfortable. Provide plenty of shade and plenty of coal water and good wholesome food; and thoroly and regularly clean the coops and they will develop into good specimens and perhaps prize winners if the breeding is all right.

THE FANCY SIDE OF POULTRY RAISING

If one takes up the fancy, a larger profit can be looked for if one has the patience to work along until he can command a price for his stock which means that he must first demonstrate his ability to produce high class stock and then be willing to spend a little money letting the people know about it. This is probably one of the most pleasant as well as profitable branches of the poultry industry. There is no danger of it being overdone and there is always a demand for first class stock. Another advantage the fancier on a small lot has is that he can better raise a few good birds than a lot of medium grade ones, and as he can get a better price for them is usually content with a few, whereas if he attempts to raise them for market he wants to raise a lot and often crowds at a loss

Boys Interested in Corn Culture Contests Should Read Personal on Page 26.

DISEASES OF FOWLS—DIARRHEA, DYSENTERY, ETC.

Intestinal troubles in fowls are of many sorts and degrees from simple diarrhea to the almost incurable dysentery. The intestines form a large part of the alimentary canal and subject to great irritation thru sour and unwholesome food or exposure, cold, wet weather and other causes and forming diarrhea.

The symptoms are excessive discharge from the bowels. Diarrhea is responsible for very great mortality among chickens, some poultry-keepers losing a greater number from this cause than from any other chicken ailment.

In this country there appears to be great mystery over the disease known as "White Diarrhea" which has caused great mortality among incubator-hatched chickens, not due to that cause, but to something apparently not understood in artificial rearing; and, as the chicks are only a week or two old when attacked, it is readily seen that there is difficulty in effecting a cure.

Remedies

5 grains chalk, 5 grains rhubarb, and 3 grains cayenne—a pill given morning and night. Camphorated spirits is another useful remedy. A little alum in the drinking water is also useful.

For white diarrhea, a teaspoon of castor-oil followed by 5 grains of rhubarb and 10 grains of carbonate of soda, or a grain of opium. During the attack and for a little time after its abatement, the bird should be fed on soft food, and have no green vegetables. For young chicks, half a teaspoonful of olive oil is preferable to castor-oil, and boiled rice should be fed.

Professor Graham of the Ontario Experiment Station has found that there is less mortality among small incubator chicks when the egg chamber of the machine is thoroly saturated with a ten per cent solution of zenoleum and water. This should be applied before the eggs are placed in the incubator and after the proper degree of heat has been adjusted. If the zenoleum is applied after the eggs have been in the machine a day or two, it has little if any effect. The writer has tried both methods and by a comparison of the incubator birds with hen-hatched chicks, the coal-tar product appears to be very efficacious, in preventing "white diarrhea."

Don't kil! the ladybirds; every ladybird (ladybug) eats during its lifetime hundreds of aphides or soft-bodied plant lice.

Read Personal on Page 26

ST. PAUL UNION STOCKYARDS COMPANY

Report for June 1908.

RECEIPTS

ORIGIN OF LIVE STOCK RECEIVED

	Cattle	Calves	Hogs	Sheep	Horses	T.Cars
June	16833	7195	75666	7717	530	1625
Total Last Year	11752	5328	86013	5139	693	1670
Minnesota	9719	8594	50667	4630	23	1015
Wisconsin	1658	788	5661	2740		149
Iowa	24	12	409		15	8
Far South	21					1
So. Dakota	1425	138	11075	265	66	194
No. Dakota	3728	363	7854	82	175	238
Montana	91				251	14
Manitoba & N. W. T.	167					6
Total	16833	7195	75666	7717	530	1625

SHIPMENTS

	Cattle	Calves	Hogs	Sheep	Horses	T.Cars
June	12526	1055	17372	10078	586	578
Total Last Year	9170	646	117	1656	831	288

DISPOSITION OF LIVE STOCK

Sl'ghtr'd at So. St. P.	4655	5416	58451	7326		
City & Duluth Butchers	940	264	2579	17		43
Outside Packers	61		14563			124
Minnesota	2862	460	166	480	31	76
Wisconsin	1928	58		578	163	71
Iowa	2392	123			51	74
Nebraska	244					5
Kansas & Missouri	71	2			54	4
So. Dakota	122					3
No. Dakota	215				28	10
Montana & West	124					2
Chicago	969	2	64	8983	19	76
Ill's (exc. Chicago	2181	133			148	73
Eastern Points	417	15			92	17
Total	12526	1055	17372	10058	586	578

SUMMARY SIX MONTHS

RECEIPTS	This Year	Last Year	SHIPMENTS	This Year	Last Year
Cattle	120872	94057	Cattle	86981	64380
Calves	29224	27554	Calves	4805	5047
Hogs	638896	475500	Hogs	168551	15336
Sheep	103122	65578	Sheep	60501	67242
Horses	2198	2488	Horses	1853	2202
Cars	12322	10167	Cars	4240	2441

OILS, PAINTS, AND PAINT PIGMENTS.

A grove of trees about well painted farm buildings grouped so as to be effective add so much to the appearance of the place. The farm will sell so much quicker and command a better price to say nothing of the protection afforded and the convenience and comfort of the family. A lover of trees and flowers seldom goes wrong. Help make the country worth living for, and attractive to those whom we would induce to come as builders of an empire.

To plow the road side and put in cultivated grass pays. It keeps out the weeds and furnishes a paying crop of hay to say nothing of the improvement in appearance to the place. The road side is generally neglected in all parts of the country, but here and there we find an exception that shows what can be done with profit if we but make the effort. Between Grafton and Park River I saw one of the best examples of such improvement that I have ever seen in the state and the whole farm reflected the same degree of prosperity. Weeds by the road side and unpainted, dilapidated barns never did and never will attract purchasers.

If you have any painting to do this summer remember it does not pay to buy turpentine adulterated with mineral oil, benzine, etc. Neither should you use linseed oil that is part mineral oil or fish oil. Get the best for after all the oil is one of the first essentials in any paint. It is the life of a good paint and a poor paint is sure to be a failure without it. There are some dishonest painters as well as paint manufacturers doing business in the state. Look out for them and see that you get what you pay for. There have been some mighty lean work done in Fargo and some Grand Forks painters I am informed have had to pay for their dishonesty. Weed them out or you weed out watered paints.

Two farms seperated by a high way, apparently alike in soil, drainage and general appearance, each cultivated for the same length of time, one still yields 18 to 20 bushels of good wheat per acre. The other hardly produces a crop worth harvesting; the fields are oxerrun with weeds, mustard and wild oats. Why this difference? Has nature been unkind to one and generous with the other or is it pure shiftlessness? Look at the farm buildings as we pass along the road way. In one case well kept, and neatly painted and all indicate prosperity. How about the other place? Weeds everywhere. All old tumble-down out buildings that never felt a paint brush and scrawling animals tell the tale Can you see the reason for this? To which class do you belong? Take an inventory and see and then look for the explanation.

SIMPLE DIRECTIONS FOR PAINTING

Here is a set of simple rules for obtaining best results in painting. Every clerk in the store should have this information pat:

See that the surface is free from grease and soot. If the job has been previously painted and is peeling, scaling off, or cracking, burn off all the old paint. If this is not done, the new coat of paint cannot be expected to stick.

See that the surface is perfectly dry. Moisture is what often causes blistering, cracking, scaling and like troubles. Moisture is always present in green or pitchy lumber, and after a rain, a heavy dew or a fog.

Do not paint over pitchy surfaces and expect satisfactory results. No paint can do well on such surfaces.

Do not paint in frosty weather or over too glossy a surface. Any paint will "crawl" under such conditions.

Lumber is becoming yearly more difficult to paint successfully. Do not expect the finishing coats to stand unless the primer is used as thin as possible, thoroly brushed out and allowed to become bone dry before recoating.

It is false economy to use only two coats of paint on new work. Don't expect best results unless you use a primer and two subsequent coats.

Apply the paint in thin coats. Brush it out thoroly. Any paint put on too thick is liable to crack and peel, and such workmanship is responsible for more unsatisfactory results than any other one cause.

Do not let one coat of paint stand for any length of time before applying the next coat and expect good results after becoming thoroly dry. Each coat must be applied one after the other within reasonable time if long wear is expected.

Wherever possible, always employ a good practical painter.—Hardware Trade.

NATIONAL PAINT LEGISLATION

The session of Congress just closed failed to enact a National Paint Law, and, from such information as we can gather, it would seem that the paint manufacturers of the country are very

Hundreds are using Personal, page 26.

far from desiring national legislation. To one looking upon the subject from the outside it would seem that they are very short-sighted in their opposition, for a good national bill would prevent the necessity of the enactment of many state laws, which must of necessity differ and thus lead to more or less confusion.

The paint manufacturers, thru their association, at first expressed the hope that a national law might be enacted, and when agitation seemed favorable to such a law they then put themselves on record as opposed to the enactment of such a law. Later their representatives seemed favorable to legislation, only a few days later to be quoted as having switched again, unfavorable.

As one sees the situation at the present time, it is questionable whether they want legislation, as long as they can stave it off. Perhaps, it is their desire to get matters into shape so that there will not be so many exposures as when the North Dakota Law went into force. Perhaps, it is their desire to put upon the market more and better lines of paint and get rid of the products now in the hands of the dealers. We can hardly blame some of the manufacturers if this is true, but in the case of others there would seem to be little excuse for such a course. Taken as a whole, national legislation is bound to benefit the honest manufacturer of paints, and any man who opposes the enactment of a good paint law has got something to cover up. The people have a right to the protection, they are going to have it, and if they do not get it thru national legislation they will thru state legislation, and the paint manufacturers must expect to meet more drastic state paint laws. If they endeavor to insert any "joker," as they did in the Minnesota Law, it will be a sorry day for the paint manufacturers of the country; and before the yet thru it will not be strange if some of them should be wiped out of existence, for the people do not believe in that kind of legislation which is intended only to deceive and mislead, and furnish protection to those who desire to fleece the public out of a little more of their hard-earned money.

The writer does not believe that this fairly represents the sentiment of the best paint manufacturers. Perhaps they are inactive, but this they cannot afford to be when there is so much at stake as at the present time. Let us hope that as Congress convenes in December that we may have unanimity of action which will result in having a good national law, one free from jokers, one fair alike to the honest manufacturer and the consuming public, and all will be benefited; and the paint business will be put upon a more sound footing than it is at the present time.

SOME PAINT TALK

It is a matter of more than passing interest to know that the National Lead Co. is now back of the Heath & Milligan Mfg. Co. in the mixed paint business. Unfortunate financial difficulties the result of rebuilding an expensive plant crippled the company and the Lead company are now back of them in the new reorganization. It will be interesting to follow the output of this company and see if they continue to follow the lines of the old company in paint formulae or will they gradually approach the North Dakota Standard? This is as important side light on what constituten a good mixed paint. If white lead is the best paint known, as the sponsers have maintained, then are we to have it? If the old firm were correct, we will have a drifting away from white lead to the substitutes. There are many other interesting questions which come to the mind of one studying the paint problem. The next five years one will witness many marked changes in the paint industry.

It is also worthy of note that one of the firms making a paint containing no white lead is now making paint according to the North Dakota Standard and have completely abandoned the old formulae so long and favorably commented on by paint manufacturers. It is further noticeable that the public are now giving more attention to these matters and the North Dakota idea seems to meet with more favorable comment than when first put forth. It is also rumored that another large concern is considering the advisability of discontinuing their present lines of paints and putting out a striaght lead and zinc product.

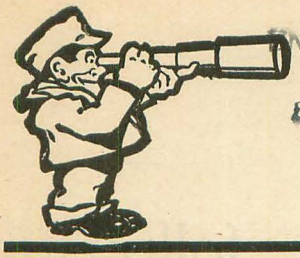
All this leads one to enquire once more what is the best paint? North Dakota is seeking to find out and there is but little questions but what the experiments being carried out at the Agricultural College are going to answer many mooted question in the near future and they clearly indicate that there is a science of paint making and paint using not well understood at present either on the part of the manufacturers or paint users in this country.

The results of practical paint tests at the A. C. are set forth in part two of the 18th Annual Report of Station for a number of well known commercial paints and several socalled catalog paints as put out by Department Stores The report is well worth reading by all interested in paint matters.

The paint put out by Sears and Roebuck show up bad, also the Columbia White lead, likewise the Weiis Bacurian White lead. Certainly this is not favorable to these much advertised paints. The condition as reported for the mixed paint put out by the T. M. Roberts Co. is as follows less than one year after application.

"Service Conditions: June 1st, 1907, the white was peeling badly on the hard pine, somewhat on the white pine and clapboard siding; the gray showed indications of doing likewise; gloss and elasticity of both had entirely disappeared. Oct. 1st, peeling and checking has proceeded rapidly, the white being off in large patches on the hard pine and in bad shape on the other surfaces. The disintegration of the gray is proceeding rapidly. General condition of both paints is very poor."

Not a good showing for "dope" paints.





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3—The City Investing Building, which is 34 stories high and requires 23 elevators to handle the passengers.

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Montreal and Winnipeg

Use Address Nearest You

IMAGINE, any of you, the following:

An owner of a piece of property who wants to make his house or his barn look better than it does, walks into a store where paint is sold, and brings his good money with him and is willing to pay that money for good paint for a good purpose.

He doesn't know very much about paint; but he has been led to believe that the dealer does. And so he trusts that dealer. He gives him his money, and he gets, let us say, not good paint, or not as good as he bargained for, but instead a paint that is otherwise. He buys "otherwise-paint."

Now who has the worst of this?

Everybody concerned—maker, seller, and user. Besides these there is that helpless and most conspicuous sufferer of all—the house, or the barn, or the roof, or the fence, or the interior, or the buggy, that not only gets it but shows it.

This sort of thing happens every day. It ought not to happen any day. Some day it isn't going to happen any more. Already this business of mutuality of confidence is not only in the air but may be realized in the stores of some honest dealers where the honest paint of an honest maker is sold at an honest price to the man who comes to buy.

The moral idea in business, and what we may term the business idea in what is moral, is here; and it has come to stay.

You can find it even in paint; and when you do it will have paid you to have found it. Good paint pays. Pays the maker who made it by making bigger trade. Pays the seller who sells it because it brings you back to buy again. Pays you because you bought your money's worth of a worthy thing, and pays your house because of better looks and better protection and longer wear.

There is one make of paint that does its duty all four ways: by maker, seller, user, house—the name of it is the Horse Shoe Brand, manufactured in St. Louis by the Mound City Paint & Color Company, and sold to, and bought by, the most reliable paint dealers in the United States. You'll never find a poor dealer or an unreliable tradesman handling Mound City Horse Shoe Brand. Most of the good ones do; not all, but most.

Horse Shoe Paint is the name of a brand; a brand that signifies; a brand that has a real meaning, and value to you. When you see the Horse Shoe Brand whether on paint for the house, or paint for the barn or paint for floors, you can know by the sight of it there on the can that that is the paint that will do, and does, what you want it to do, and does it well; as well as you could hope, and better than you expect.

And so, the main point of the matter is this: that if you are looking for a paint you can trust without going through the usual tragedy of a trial—you may be trusted to remember your own interest by remembering the name and the brand of "the Horse Shoe."

When you get our color card that you send for, you will realize the difference there is in paints.

Mound City Paint & Color Company

Good Makers of Good Paint.

811 & 813 N. Sixth Street, St. Louis.

NORRIS B. GREGG, Pres. WM. H. GREGG, Jr., Vice-Pres. E. H. DYER, Secy.